

Gen. G. M. Dodge,
Chief Engineer,
Omaha, Neb.

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Fort Wayne, Ind.,
Feb. 9. - 1867

"You may have noticed that General Sherman in his correspondence from the Plains, indicated the eastern base of the mountain where our line strikes it as the natural point for a permanent center for military supplies &c. for Indian operations.

Now if that shall be the programme, and it looks very sensible, could you not prevail upon the military authorities to commence the erection of a Post there early in the spring, under an assurance that your trains shall run there in the fall? The advantage is that with a regiment or part of a regiment at Crow Creek or near there, another at the end of the track to be moved forward as you progress, and escorts passing between to protect the military transportation, our railroad operations would also be protected, incidentally, and confidence inspired everywhere of the entire safety of laborers on the Lodge Pole. Without some very decided assurance of perfect safety, which only the Government can give, I fear you will not get laborers along that much dreaded Lodge Pole, heretofore so often annoyed by Indians, thieving and scalping.

I congratulate you upon the adoption of your policy by Congress of transferring the Indian business to the Army."

Jesse L. Williams

Conflict
The Company had met in New York during January for the purpose of letting the work for the next year, which the Government Directors and others attended. I made an endeavor to get Mr. James A. Evans selected as one of the commissioners for the examination of the road.

Mr. B. F. Bunker wrote me on January 4, 1867, that there was a good deal of conflict in matters in New York but he thought the Boston interest would finally succeed.

Conflict
Credit Mobilier
The meetings of the Board in New York were very stormy. There was a desire among a large number of the directors to take the management of the road away from Mr. Durant. Mr. S. B. Reed, who was in New York at the time wrote me on January 17, that at the Executive meeting on that date, there was a determination on the part of the Committee to make an entire change in the mode of building the road. He said Mr. Durant was full of suggestions and he thought he would set some trap in which they would all fall and allow the work to go on as heretofore. The final result of all their conferences was that on January 27th, they let the work from the one hundredth meridian to the Credit Mobilier to the foot of the mountains. No change in the management was made for the present.

1867
On January 16th, I received the following letter from General P. E. Connor showing his views on the condition of matters in Salt Lake:

Stockton, Utah.

"I am in receipt of your letter of Dec. 21st. I moved my family to this place 38 miles west of Salt Lake a couple of weeks since and am engaged in mining with only partial success; my capital is exhausted and every obstacle is thrown in my way by the church authorities and people of Utah. I have experimented enough to know

that I could make mining here a great success, had I, in addition to my present machinery, furnaces, &c. about \$15,000.

Brigham Young and his satellites in the pulpit and through the press have been grossly abusing me since my return from the East; indeed, so much so that my friends feared that some of his fanatical followers would assassinate me. I have not dared go on the streets of Salt Lake after dark since the assassination of Dr. Robinson, except when accompanied by a number of friends.

Brigham's hatred of me is intense, caused by my making him behave himself while I commanded here, and unless the Government or Congress does something for us, I and most of the Gentiles will be compelled to leave in the spring. Many hundreds of Gentiles have already been frightened away and every effort is being made by Brigham to drive the balance from the territory.

If your company should commence building the road at Salt Lake next summer, it would make a change for the better, and would result in retaining here many Gentiles who now propose leaving. As for myself, unless some change takes place, I shall leave my property, \$351,000 worth, and start for California in the spring. The Mormons loudly boast that Andrew Johnson is their friend and they do not fear any punishment for their crimes and persecution of Gentiles.

I have made diligent search and inquiry for coal and iron and could not find any coal that would coke nearer than San Pete, 160 miles south of Salt Lake. I am, however, assured that there is coal that will coke together with hematite iron on Bitter Creek. It has already been taken up, but the right of the parties can be purchased cheap. If I remain here, and you wish it, I will examine it in the spring or before. The next best chance I think is here. Some parties are prospecting a coal vein; thus far the vein is wide but of an inferior quality of coal and running through it is occasionally found small veins of a splendid quality of coal containing a great deal of tar. The parties are sanguine that when they sink further down they will strike a solid vein of the same material. There is also in this district any amount of what a German metallurgist and iron smelter living here calls a superior quality of iron ore. If successful in finding the coal as anticipated here this will be a splendid place for your works on account of its convenience and splendid facilities. Wood is also plenty here and charcoal iron could be made if it would answer.

I hope you will write to me on receipt of this; perhaps your letter may decide my future course. If there is a probability of your company doing anything here next summer, in either building the road or making iron, I may remain in the country. I congratulate you on being elected to Congress. I suppose you will take your seat on the 4th of March. I trust you will use your influence to have something done for us out here. [Brigham has succeeded (through his hired satellites in Washington) I am told, in prejudicing the President against me. I care not for that. I ask nothing of him but protection for myself and other loyal American citizens in this territory.]

My family are well and join me in kindest regards to yourself and Mrs. Dodge."

I submitted my report of the work for the year 1866, accompanied by the report of the Division and Assistant Engineers.

As my report is a partial resume of the Division reports, I only give here my own report. All the reports ^{included} were published in the Union Pacific Railway reports of the Chief Engineers with accompanying reports of the Division engineers for the year 1866 ^{and published} by the Government:

Omaha, Neb. June 19, 1867.

Oliver Ames, Esq., Pres. U.P.R.R.Co.,
20 Nassau Street, New York.

Dear Sir:-

I have the honor of submitting the detailed report of the operations of the engineering department of the U. P. R. R. for the year 1866.

*Report as per
of M. P.*
In giving instructions for the year, I endeavored to concentrate the work for the different parties with the view of deciding, beyond a doubt, upon the best line from Fort Kearney to the west base of the Rocky Mountains. Knowing that the crossing of the mountains adopted by us would, to a great extent, control the selection of a line approaching them from the east, all our energies were put forth to determine that question at the earliest practicable moment.

In assigning the chiefs of parties to their work, I placed Mr. James A. Evans in charge of the line over the Black Hills range of the Rocky Mountains; Mr. P. T. Brown, chief assistant, in charge of the surveys up the Republican and South Platte rivers, and the surveys over the Rocky Mountains west of Denver; Mr. L. L. Hills was placed in charge of the location up the Platte Valley, and lines between Platte and Lodge Pole valleys; Mr. Bates had charge of the surveys west of Salt Lake; Mr. House had charge of the Omaha office and the surveys required of me on that portion of the line being built, the laying off of depot towns, and procuring right of way.

In a separate report, of November, 1866, the result of my examination of lines over the Rocky Mountains and the eastern approach is fully set forth, and the line recommended and adopted was on the north side of Platte river to the mouth of Lodge Pole; thence up that stream 105 miles; thence due west, crossing the divide between Lodge Pole and Crow creeks; thence over the mountains, on the Crow Creek and Lone Tree divide-line, entering the Laramie plains near Willow Springs; thence to the crossing of Laramie River, near Fort Sanders.

Mr. Bates's party made surveys west of Salt Lake, in order to determine in our own minds the route for the road to take through that country, so that in case it should have any controlling influence on the route east of Salt Lake, we might have full knowledge of the fact, and in our location be governed accordingly.

The division engineers and chiefs of parties set forth their work through the summer in detail, and relieved me from the necessity of explaining the different lines or discussing the different surveys. I shall, therefore, only glance at the prominent features, preferring to let each chief of party have full credit for the work performed, and set it forth in his own way.

Surveys of Mr. James A. Evans, Division Engineer.

Mr. Evans, in the early part of the season, ran several lines between the Republican and Platte rivers. He was then ordered by me to turn over his party to Mr. P. T. Brown, first assistant engineer, assume charge of the lines in the Black Hills, and to obtain the best practicable line over the mountains. The instructions appear fully in his report. I subsequently sent instructions directing a careful examination of the country from Evans's Pass almost due East. My knowledge of that country indicated to me that we should seek a crossing of the mountains somewhere in that vicinity; and the examination of the mountains on the several lines discussed in Mr. Evans' report of 1864-5 and his report of this year, shows that the line known as the Lone Tree and Crow Creek line were superior to all others. It is the line discussed in my report of November 1866, and adopted by the company. ✓

The difficulties encountered in running a line through Laramie canon were enough to deter any person from undertaking the project; but Mr. Evans pushed through, taking three weeks to run 25 miles of the canon--a narrow, wild, precipitous gorge, and never before passed by man. Everything had to be packed by

by the men, as pack mules could not find footing in the gorge. He demonstrated the impracticability of this line, although the Laramie river makes a thorough cut through the range, heading west of the mountains, and emptying into the Platte river east of it, indicating, before examination, a means of avoiding the high grades necessary to cross the mountains.

In examining the Crow creek country his party were thrown into a country never before developed, and we found that the prevalent idea formed of this country, as to its general character, was entirely erroneous. The line run down Crow creek was impracticable from bad direction, and was abandoned. It, however, aided us in determining the main line of the road; also, it developed fully a portion of the country through which a branch to Denver might be built, and determined the extent and vein of the coal and iron fields of that portion of Colorado.

During the winter, Mr. Evans's party was encamped in the Black Hills, for the purpose of examining minutely the country through which we had determined to build the road, to develop and cross-section the country immediately along the line, and especially to note the winds, currents, snow and rain of that high altitude during the winter months. So much had been said about impassable snow-banks, extreme cold, high winds &c that I deemed it best to determine these questions fully. The past winter has been the severest for years. The daily journal kept of the fall of snow, prevalent wind and weather, demonstrates conclusively that we shall meet with no obstacles from these sources but what we can easily overcome, and that there will be no greater obstructions in running this road than those encountered in our Eastern and Northwestern States, as Mr. Evans' party took the field in April and remained in it during the entire year--a feat that I was assured by old experienced mountaineers could not be accomplished, but which my own experience on the plains and in the mountains convinced me was possible; and which was done without suffering or detriment to the party, and to the great benefit of the company.

During the time they could not keep the field they built a good two-story house and warehouse at Fort Sanders, for our future use, so that we can hereafter keep our party there in the winter, and not be obliged to bring them all to Omaha, at great loss of time and at great expense.

The line known as the Crow creek and Lone Tree divide-line, with its low grades, its cheapness and alignment, as compared with all others, is very creditable to the perseverance, ability and professional skill of Mr. Evans. It was obtained after spending three years in that region, and after bending all our energies this year to the fulfillment of that object; it was the key to all our work for 1867; and the possession of it lifted grave doubts from our minds and decided, beyond all question, that it was the line which should be adopted by the company. Mr. Evans' party run 623.6 miles instrumental lines, and in marches and reconnoissances 956 miles.

Surveys of P. T. Brown, First Assistant Engineer.

Mr. Evans' party was turned over to Mr. P. T. Brown, in June, at Ft. Kearney, and he was instructed to develop the country up the Republican Fork, and connect with the South Platte line near the mouth of Beaver creek, then run up the Platte to Denver, there to await instructions for the surveys over the mountains. In making a general organization of the work for the summer, I had assigned to Mr. Brown the development of the Republican valley the Platte valley from Fort Morgan to Denver, and the lines west of Denver crossing the main range of the Rocky Mountains. Knowing the anxiety of the company to build their road, if practicable, through Denver, and the mining regions of Colorado, I determined to exhaust the question of the practicability of a line west of

Denver, and to develop the entire country from Fort Kearney to Middle Park. The result of the examinations is that no line can be obtained through this section of the Rocky Mountains that compares with the lines adopted by the company, which are shorter, cheaper, of better grades, &c.

I gave the lines over the mountains west of Denver a thorough examination, and our efforts were to obtain a line across the mountains in that vicinity that we could build on. I knew all the sympathies of the company were in that direction, but I was obliged, reluctantly, to report against that route, the engineering difficulties being such, when compared with other routes, that it was not practicable for the company to overcome them.

Mr. Brown, in his report, fully develops the prominent features of that country, its resources, and its practicability for railroads. In comparing the line up Lodge Pole, and west, with the line over the main range of the Rocky Mountains, via Berthoud Pass, although I did not, in my report of November 1866, consider the country from the mountains to Salt Lake, yet to satisfy myself, I did give that question a careful examination, and we found that, after passing the main range of the mountains west of Denver, we had greater obstacles to overcome, before reaching Green River, on that line, than on the line via Laramie plains. Our surveys also demonstrate that, to make a successful crossing of the Wahsatch range, we are forced to cross Green river as far north as the mouth of Black's Fork or Bitter Creek, the point where the line going west from Laramie plains crosses, thus increasing the distance some 100 miles over the direct route adopted by the company. The snows in the Rocky Mountains, at Berthoud Pass and Hog's Back, were such that, in September, our parties were driven off the mountains, and during the winter the passes west of Denver are impassable for foot or horsemen. On the line west of Denver we have to rise 10,000 feet to reach grade-point and mouth of tunnel, while on our adopted line we only reach an elevation of 8,200 feet, 5,000 feet of the rise on the Berthoud Pass line (the lowest tunnel we can get) being made in 58 miles. The tunnel on the Hog's Back is some shorter, if we could rise to the proper point for grade and get down on the west side; but the distance is less on this line than on Berthoud Pass line; and, in descending from mouth of tunnel, on the west side of the mountains, it takes 15 miles of maximum grades, with very heavy work.

That portion of the line between Latham and Denver run by Mr. Brown becomes common to all the branches from our road to Denver, the only question being whether we shall keep the east or west side of the Platte river. After Mr. Brown had finished his surveys in the mountains, I sent from La Porte instructions to move with his party to the north of Lodge Pole creek, and locate the line I had concluded to adopt to the east base of the mountains some 104 miles up Lodge Pole, sending him profiles and map of the preliminary run by Mr. Evans up that valley in the early part of the season. He moved immediately to Fort Sedgwick, obtained his escort, and located about 105 miles of the adopted line up Lodge Pole creek, finishing his work in December, after frost and snow had come. During the surveys in the mountains and up Lodge Pole creek, Mr. Brown's party suffered great hardships. Once in the mountains they had to abandon everything and seek safety in the valley. As soon as the storm was over they returned, found their stock in the Middle Park and finished their work.

Mr. Brown's party run over 500 miles of line, 100 miles being mountain work and 100 final location.

Surveys of L. L. Hills, First Assistant Engineer.

Mr. L. L. Hills entered the field as first assistant to Mr. D. H. Ainsworth, division engineer, who located the third hundred miles, and resigned to accept position in the C. R. and P. R. R. Mr. Ainsworth's location was approved, and immediately put under contract. On leaving, I instructed Mr. Ainsworth to turn over the party to Mr. Hills.

Mr. Hill's surveys demonstrated the impracticability of any approach to the Crow creek and Lone Tree divide-line over the high country from the east, south of Lodge Pole creek; also the feasibility of a branch from several points on the adopted line to Denver. It will take a further examination of the country west of Crow creek to determine fully the best line for the branch which surveys will be made during the coming season. Mr. Hill's party located, during the season, 273.5 miles, and run, of preliminary line, 450 miles, making a total of 723.5 miles; adding the amount run by Mr. Ainsworth, of located line, 100 miles, gives a total for the season's work of 823.5 miles--certainly a very creditable showing. Their work being mostly plain work, with no mountains to encounter, enabled them to accomplish more miles than any one of the other parties. The party was composed of young men of more than ordinary ability.

Surveys of J. E. House, Division Engineer.

In addition to the engineering duties, there has devolved upon me the charge of right of way, depot towns, and bridge and river surveys. Mr. House has had direct charge of this department. In addition to his other duties, he had laid out and brought into market the depot towns, some twelve in number. A system of record and sale has been adopted, and each depot has now a town attached, giving all an opportunity to purchase and settle at very reasonable rates. Lots are sold to settlers at from \$25 to \$250 and sold for one-third cash, and balance in one and two years. The contract binds the purchaser to plant shade trees within twelve months from date of purchase, and in nearly every town several lots have been sold and improved. The right of way and depot grounds have been obtained for the entire length of the road, the depot grounds at Omaha extended, and grounds for the government buildings and depot bought and assigned to General Myers, chief quartermaster, for that purpose.

A system of plats and records of the line, and the right of way, with an abstract of title, has been inaugurated, so that, at a glance, the company can obtain all the information they may desire on that score.

The surveys for bridging the Missouri River have been advanced, and, in separate reports, discussed. Mr. House has had charge of the office during my absence, and has discharged his duties to my satisfaction.

Surveys of Thomas H. Bates, Division Engineer.

My instructions required that the surveys of Mr. Reed, in 1865, should be extended from Reed's Pass, in Humboldt Mountains, to the California State line. Mr. Bates was selected, in New York for that duty, and reported to me in July. He immediately proceeded to Salt Lake and entered upon his duties. His very clear report sets forth the work performed by his party, and demonstrates that the Humboldt and Truckee river valleys afford a feasible and most practicable line for a railroad over that portion of the country. The information obtained by Mr. Reed, in 1865, of the country west of Salt Lake, together with that obtained by Mr. Bates in 1866, shows clearly that there is no great obstacle in the way from Salt Lake to California State line, no matter whether we choose the route north or south of the Lake.

Mr. Bates's surveys give us, practically, a connected line from the Missouri river to the California State line. Mr. Bates' party run 371 miles of line, and the party had to march, to accomplish this and return to Salt Lake about 1,000 miles.

They entered and developed a section of country that had never before been surveyed, and the discovery of Reed's Pass, in the Humboldt Mountains, in 1865, by Mr. Reed, has given us a line from Salt Lake west direct, with light work and comparatively easy grades. Ties for superstructure and timber for bridging this portion of the line can be obtained from Salt Lake and in the Sierra Nevada, with plenty of building stone along the route.

Mr. Van Lennep's (Geologist) report.

The geology and mineralogy of the country, developed by the surveys during the year 1866, east of the Laramie plains, are ably set forth in the report of Mr. Van Lennep, geologist, who spent the entire season in that country with the parties, and devoted his whole time to this duty. The report is certainly a valuable one to the company and the country. It develops a region of country seldom examined, being too far north to have received much attention from the mining interests of Colorado, but which, I think, from this time forward, will draw the attention of miners and capitalists, and will disclose a mineral wealth heretofore considered improbable the causal examination hitherto given it having always led to the conclusion that the mountains north of Thompson's Creek or Cache la Poudre were hardly worth the time spent in prospecting. Iron, coal, copper, gypsum, and building material for the construction of the road, certainly exist in great quantities, while the indications of silver and gold are such that I do not hesitate to predict rich mines and, hereafter, valuable discoveries in the immediately vicinity of the line.

The mountains south of the Laramie plains also contain minerals to a great extent, but as yet hardly developed, while in the Wind River, Wasatch range, and Rush Valley mines, in Utah, indicate mines of great value in the vicinity of our surveys.

Mr. Bates' report develops fully the mining regions along the Humboldt Valley line, and it can be safely said that, after striking the Rocky Mountains, our line is in the vicinity of valuable mines until it strikes the California State line, crossing a succession of mountain ranges, all of which, it is fully demonstrated, are rich in coal, iron, copper, silver and gold.

The surveys this year have connected our lines, settled the location over the first range of the Rocky Mountains and given us the information, from that point to the California State line, that we have desired. The preliminary line ran has developed the country, shown us the obstacles we have to meet, what facilities the country will afford in material to build our road, the resources we may expect from it after being built, and demonstrated that a line can be built from the Missouri River to the California State line without meeting any mountain barriers, impassable snows, or great deserts that it is not practicable to overcome; that we have a line, for directness, distance, alignment, grades and work that it not equalled by any other road of the same length in the world. I claim that we have been highly successful in determining the general route of the road; that we have, in fact, the best general route of the road across the continent. In the detail of the ~~best general route across the~~ location, and the selection of the best ground on the general route upon which to build the road, our time has been so limited that we have not been able to do justice to it; but when it is remembered that we have all the time been in a hostile Indian country, unceasingly dependent upon military escorts, every mile having been located under guard, without the ability of going beyond the range of musket, the party perpetually apprehensive of attack, it will be admitted that the engineers have performed their work much better than could have been expected.

The first division, from the Missouri river to the mountains, is mostly in Platte or Lodge Pole valleys, crossing the Great plains, and affording but very little material for building the road. Ties for the first three hundred miles are taken from the Missouri river, and for the fourth and fifth hundred from 20 to 60 miles from the line. Stone exists only in limited quantities, and coal is not reached until we strike the mountains. Over this division we made our final settlement on line, and, for the most of the distance our final location.

The Mountain Division, from Crow creek to Salt Lake, covers the Black Hills range of the Rocky Mountains, the Laramie plains, the main range, near Bridger's Pass, and thence over the Wahsatch to the Great Basin. Our difficulties here are in the Black Hills, Medicine Bow and Wasatch range; but our preliminary line indicates that we shall overcome these mountain ranges without extraordinary expenses, with comparatively high grades, with but few miles of maximum grades, and with an alignment that is extraordinary, when we take into consideration the character of the country.

The surveys of the year 1867 will be devoted to an examination of this division in detail, and our location will be settled upon through it. Crossing the Black Hills we have plenty of timber--cedar, mountain pine and hemlock. Rock in cuts, and adjacent to the line, exists in sufficient quantities for all building purposes, and the whole country is underlaid with valuable mines of silver, iron, copper and gold.

After passing the Black Hills, we cross the Laramie plains, a broad park, 200 miles long in latitude, and 100 miles wide in longitude, shut in by the main range of the Rocky Mountains on the South and west, by the Sweetwater, and Black Hills on the north and by the Black Hills range on the east, with the Rattlesnake range crossing it from north to south, through its centre. It is watered by tributaries for the North Platte, and has a general elevation of 6,500 feet above the sea. The streams rise in the Medicine Bow Mountains, flow north, cutting this immense park at right angles, furnishing fair rafting streams to bring down to our line the immense bodies of timber on the north slope of the Rocky Mountains, which will build up a lumber trade that no one today can calculate the extent or value of.

Soon after striking the Laramie plains, coal begins to crop out, and it extends west, with few intervals, to Salt Lake. Sandstone and limestone exist in abundance. Material for building the road is of easy access to the line.

On the western side of this plain we pass the main range of the Rocky Mountains, about 7,200 feet above the level of the sea, 1,000 feet less than the elevation of Evans' Pass in the Black Hills and enter the Bitter creek country on the western slope of the Rocky Mountains, which is desolate, dreary, not susceptible of cultivation, and only portions of it fit for grazing. All of it is underlaid with immense beds of coal. Timber on this portion of the line, for 150 miles or more, is scarce, and the country has no inviting qualities.

After passing Green river we follow Black Fork some 80 miles, then commence raising the Wasatch Mountains, and, until the valley of Salt Lake is reached, we are in a mountainous country. Timber on this portion of the route abounds, coal is found, and there are indications of iron, silver, oil &c.

This mountain range, although having at its western base the largest settlements of any of the territories, in its mineral resources is but little known. The people in Utah are thifty, have brought the available portions of the valley under cultivation, and have built up here, right in the heart of what was once considered a grand waste, known as the Great American Desert, a country and city that any State might be proud of.

Along this portion of the line material abounds of all kinds for the construction of the road. Produce for laborers will be found in abundance, at fair prices, and within easy access, and labor to build this portion of the road exists there today, without importing a single man or mechanic.

The Pacific Division, from Salt Lake to the California State line, is divided, by the formation of the country, into two subdivisions, the first reaching from Salt Lake to Reed's Pass, in the Humboldt Mountains. This subdivision was examined on the line to the south of Salt Lake by Mr. Reed, in 1865. Its great objection is the desert, 42 miles long. The surveys indicated a practicable route, with easy grades and light work, but a great scarcity of water and timber. Examinations during the latter part of 1866 and the beginning of 1867 indicated a better route to the north of Salt Lake, crossing one arm of the lake, turning Promontory Point on the south, turning strongly north to Spring valley, thence west, skirting

the northern rim of Great Desert or Mud Flats, passing through North Passes of Taone and Pequot Mountain ranges, and thence to Reed's Pass, in Humboldt Mountains. This route is shorter from the point where Weber river, Ogden river, or Bear river, debouches from the Wasatch range, than the route through Salt Lake city and south of the Lake, avoids the desert, and places us in a country, a large portion of which is said to be fine grazing land, and a portion susceptible of cultivation, with a fair supply of water and timber, and, in grades, alignments and cost, will compare favorably with the line south of the lake. It is also favorable for a branch to Idaho or Oregon via Pilot Springs and Raft river to Snake river. Which one of the two lines west of Salt Lake is adopted, our line will enter the valley of Salt Lake at such a point as to take advantage of either without detriment to us or derangement to our present surveys or plans. Our surveys have also indicated a practicable route from Fort Bridger down Bear river to Salt Lake valley, or down bear river to Soda Springs, thence across to Snake River, and down that Valley, up one of its tributaries--Goose creek, or in that vicinity--to Thousand Springs valley, thence to Reed's Pass. This route is being examined. Its advantages are supposed to be the avoidance of heavy grades and work, which we encounter in crossing the Wasatch range. In fact, this route turns that range to the north. Before a final location is decided upon this year, our surveys through this country, which were pushed all winter, will be before us, and will develop the main features of any line that can be gotten through that country.

From Reed's Pass to California State line, the second subdivision of the Pacific division, we are in the valley of the Humboldt to the sink, then cross to the Truckee Valley, and follow that to the California State line, where we connect with the Central Pacific railroad.

The Humboldt valley affords no timber, but plenty of all other building material. A large portion of it is susceptible of cultivation. The western portion is already taken up, and the line passes near the mining regions and cities of Nevada. It is direct; no grades to exceed 90 feet to the mile, and but few miles of that; by increasing the distance grades can be reduced to 50 feet per mile.

In thus briefly describing the general line of the road, I have paid no attention to the resources of the country, as relating to its future business; but every day demonstrates that, as far as built, the road will pay. The immense trade and traffic flowing to and from Nebraska, Colorado, Utah, Montana, Nevada, California, and the impetus it will give to the mining countries, as soon as it reaches there, no one can now estimate.

As a line crossing the continent in the latitude it does, it has advantages possessed by no other line that has been or can be obtained; and it enters the heart of the best mining country yet developed, with superior advantages for building lines north to Montana, or northwest to Idaho or Oregon, south to Denver, and south-west to Pharanagat; to all these places are natural outlets from the main line, and valleys through which they can be reached, without meeting any of the great mountain barriers or deserts that the general topography of the country indicates, and which must be encountered in reaching these places on any other of the proposed routes across the continent.

There are now built and running 305 miles of the road, commencing at the Missouri river and extending 10 miles west of the North Plate river. Of this distance, there has been built during the year 1866, between the 1st day of April and the 1st day of December, 254 miles; more road than was ever before built in the same length of time; and when we take into consideration the disadvantages under which the work was performed, with no railroad connection east, entirely dependent upon the Missouri River for our material, and upon the country for labor, with these obstacles to overcome, it challenges the attention of the world, and has drawn to it the eyes of the whole country.

The construction of the road has been under the direction of Mr. S. B. Reed, General Superintendent of Construction, assisted by Mr. Webster Snyder, General Freight Agent and Assistant Superin-

tendent; and the corps of workmen, so well organized, and who have so faithfully performed the duties, are entitled to the thanks of the Company and of the country. The track-laying, under direction of Messrs. J. S. and D. T. Casement, reached as high as 3 miles per day, often 3 and averaged 1 3/4 mile per day for the days worked.

The track was faithfully laid, and well surfaced up as fast as the superstructure was put down, so that in two days after being laid down, cars ran smoothly over it at 30 to 40 miles per hour.

The road in its grades, alignments, superstructure, stations, tanks, turnouts, and equipments, is a first-class American road. It has received the critical examination of the Government commissioners, on every section of 20 miles, as fast as built; and not one mile of it has been rejected as not coming fully up to the requirements of the law.

I desire to acknowledge my obligations to the military authorities for their uniform aid and interest in the road. They have been prompt to respond to all applications for escorts and protection, and have sent in charge of their troops, officers who held them under good discipline, and who were often of great aid to us in selecting camping grounds, guarding trains, stock &c.

To Lieutenant General Sherman the company are especially indebted. He has taken great interest in the work, and has always instructed department commanders to give us all the aid in their power, consistent with their duties, and never to let the work stop or lag for want of military protection.

To General Cooke, commanding Department of the Platte; General Myers, Chief Quartermaster; Major Cushing, Chief C. S., and all the Department Staff, we are also indebted; and to Col. J. K. Mizner, commanding Fort McPherson, and Col. H. R. Mizner, commanding Fort Saunders; Major Kellogg, commanding Fort Morgan; Major Neil, commanding Fort Sedgwick; and commanding officers of Fort Laramie, I desire to tender the thanks of the company for the prompt and efficient manner in which they have always aided us. I have not the names of the commanders of our different escorts, but have heard my chiefs of parties speak in terms of praise without exception. With such cheerful aid from all the military, we cannot calculate the benefit it has been to us, the time it has saved, and the miles of unnecessary travel we have, through them, been able to obviate.

With Brevet Major-General C. C. Augur, commanding Department of the Platte, I have made arrangements for protection during the year 1867, and he has been very liberal, considering his means.

In submitting the reports of my chiefs of parties, I desire to call the attention of the company especially to the energy and perseverance with which all of them have performed their duty. Often threatened by Indian attacks, sometimes without escort, and obliged to examine the country alone, a portion of the time during the winter, they all have had narrow escapes, have had stolen stock, camps attacked, and been caught in heavy snow storms, in extreme cold, without fires; but, as yet, we have not lost any lives, or any stock of great value. In a country uninhabited, 100 to 1,000 miles away from any aid, and thrown upon their own resources, their positions have not been sinecures nor their responsibilities light. I have never given an order, no matter how difficult to perform, or what the obstacle to overcome, but they have all obeyed it with that energy and personal interest that only under such circumstances can bring success. The young men composing the parties are, as a general thing, far above the average, many of them of fine education, and who not only perform the duty well, but intelligently. To Messrs. Evans, Bates, and House, division engineers, and Messrs. Hills, Brown, Hodges and O'Neil, assistant engineers, who have had charge of parties, I am under special obligations; also, to Mr. Van Lennep, the geologist. They are all to take the field for 1867.

I have submitted from time to time, maps and profiles of parts of the line. I now submit profiles of all the line not heretofore sent you; also, maps of lines west of salt lake, and a general map attached to this report, showing all the lines run during the year 1866, and those run heretofore making a connection from the Missouri river to the Pacific ocean.

Tables of grades, altitudes and distances are also attached,

which will be of value for future reference. The grades on the preliminary line will be materially reduced in final location."

On January 14th, ¹⁸⁶⁷ I wrote General W. T. Sherman giving my plans for the year 1867 as follows:

"Yours of 4th January came duly to hand. I enclose a rough map of located line from North Platte City (crossing of North Platte River) to Fort Saunders (crossing of Laramie River) for your private information. It will give you location better than I can describe it. We run up Lodge Pole 150 miles, leaving it 55 miles east of Camp Walbach, not far from where the Middle Fort Laramie and Denver Wagon-road crosses that stream. You put a lot of friendly Indians in camp where this road crosses Hen Creek when you were up there last year. We then have 31 miles to crossing of Crow Creek, ^{going to} 700 feet elevation in this distance; here commence ascending mountains and we consider Crow Creek Crossing as the Eastern base of mountains. It is on a meridian nearly 20 miles east of Camp Walbach; from this crossing to Ft. Saunders it is 50 miles. We get into Willow Springs stage station.

I note what you say about military ~~Posts~~. At North Platte is the end of first 300 mile division. We shall put up extra warehouses, round houses, machine shops &c. and it is now rapidly building up into a town. No difficulty in accommodating here all business or troops Government may send over us. North Platte is also the base from which contractors will operate next season, the railroad from Omaha to that point going into Company's hands Jan. 1st to be operated by them. We are ^{piling} up there all our ties, iron &c. for next year's operations. In May we meant to be at Sedgwick where we can land all Government stores if desired, and by 1st of September at Crow Creek Crossing, and at the end of 1867 at Fort Saunders. Either at point where we leave Lodge Pole or at Crow Creek Crossing will be the end of our next division, and where we shall change machinery for movement west. We shall, no doubt, build up a great place there, or near there, and the Denver Branch will connect at or near one of these points. I am unable to say which just now, but think Crow Creek will be the place. Fort Laramie will be reached in 60 to 70 miles over an excellent road, either by road going along east base of Black Hills, which you travelled, or by Middle Laramie road, equally as good and, I think, better. Wagon roads, in fact, from either point, in any direction are good.

It may be, you will finally determine to make your depot for Laramie on north. At ~~Sanders~~ it is nearer timber, coal, &c. than either of the points on east base, and is not much farther from Ft. Laramie. However, during the season, you, no doubt, will use Lodge Pole crossing first, then Crow Creek, and then determine where you will finally settle down.

We are doing all in the power of man in getting out ties, pushing forward ~~material~~, so that we can complete our plans of getting to Laramie River in 1867. If we have no financial crisis, so as to close our purse strings, and meet with no unforeseen obstacle, I predict we will make it. I have my fears for the future. Financial matters generally do not look well for the country. If extravagance and bringing to us more than we sell don't throw us on the breakers, we are all right.

I wrote you about Gen. Cooke. We get along first rate with all the military, and if any new commander comes, I am ready, and shall be glad, to give him all aid, information or anything else in my power to help him along in taking care of Indian troubles, over-land route, &c.

We want to cover our work from Alkali to Laramie River as soon as the frost leaves the ground. Contractors are pushing west and getting ready. I hope you will have troops to give us ample protection. We are going to be scarce of laborers, and any lack of protection, so that workmen lose confidence in their security, would be almost fatal to us, as we must not lose a minute's time if we carry out our plans. I believe the moment you get into the Indian country, with troops for a campaign, they will leave the Platte route, but you know that it will require troops on the line to give the workmen confidence.

Made

That is what we need, to get laborers. I made an official application setting forth what I thought we should need.

Gen. Myers is an able C. M.; understands his business, and does it, and we have no trouble.

I said in my letter about Cooke that you would need 5000 men east of the mountains and north of the Platte. To put it stronger, I think in Nebraska, Colorado, Utah, Dakota and Montana, west of Missouri River, you will need ten thousand. At any rate, don't do as I had to--get well after the Indians, and then let the Interior department at Washington stop you; but get after them early and follow them to doomsday, without any let up, until they are punished for past crimes and will respect the power of the Government in the future. They look upon us now as a lot of old women, who do not know whether we are for war, or peace, or both.

C. B. & St. Joe R. R. is now running from Council Bluffs 30 miles south; N. W. R. R. within five miles--landed your troops^{to a point} within eight of Omaha. You can buy all the produce, flour, grain, &c. needed for troops and posts north of Kansas and Nebraska state line in Western Iowa and lay it down in Bluff or Omaha cheaper than you can buy it in St. Louis. The Road south lets us right into finest part of Northwestern Missouri and best part of Western Iowa; road east takes us right into the grain and produce regions of Central Iowa.

Am very busy making surveys for the bridge across Missouri River--a knotty question, but can solve it. We want to build this year. May be forced to wait until after spring freshets before we can do much; then we will try it on.

Mrs. D. and myself desire to be remembered to Mrs. S. and family. Was very, very sorry to hear of Sawyer's death. Saw Gen. Grant in Washington. Says he will go to Denver in the spring. I go to Utah about May or June to settle location from Laramie River to Salt Lake. Are you not going out then?

I believe I have answered all questions and given you such insight as will enable you to reap the benefit (if there is any) in your military operations. I keep Gen. Cooke and his staff departments privately posted, so they can take all advantages in their movements.

What I have said about points, intentions &c. of railroad company I prefer you should not make public, as such things often give us trouble."

General Sherman answered me from St. Louis on January 16, 1867 as follows:

"I have just read with intense interest your letter of the 14th, and, though you wanted it kept to myself, I believe you will sanction my sending it to General Grant for his individual perusal, to be returned to me. It is almost a miracle to grasp your purpose to finish to Fort Sanders (288 miles) this year, but you have done so much that I mistrust my own judgment and accept yours. I regard this road of yours as the solution of the Indian affairs and the Mormon question, and, therefore, give you all the aid I possibly can, but the demand for soldiers everywhere and the slowness of enlistment, especially among the blacks, limit our ability to respond. Each officer exaggerates his own troubles and appeals for men. I now have General Terry on the upper Missouri, General Augur with you, and General Hancock just below, all enterprising young men, fit for counsel or for the field. I will endeavor to arrange so that hereafter all shall act on common principles and with a common purpose and the first step, of course, is to arrange for the accumulation of the necessary men and materials at the right points for which your railroad is the very thing. So far as interest in your section is concerned, you may rest easy that both Grant and I feel deeply concerned in the safety of your great national enterprise."

After General Grant had read the letter I had written to General Sherman, I received the following from General Grant, giving his views on the matter:

"I have carefully read the enclosed letter from Gen. Dodge, and in accordance with your request return it. Now that the Government has assumed the obligation to guarantee the bonds of the Pacific Railroad, it becomes a matter of great pecuniary interest to see it completed as soon as possible. Every protection practicable should be given by the military, both to secure the rapid completion of the road and to avoid pretexts on the part of the builders to get further assistance from the Government.

I do not see my way clear now to furnish you further reinforcements beyond one regiment of infantry. As soon as one regiment of the Invalid corps is organized I can have the Canada frontier garrisoned by it, with a few companies of artillery, and send you the 4th Infantry now on duty there.

It might be further practicable to send you a regiment of invalids to occupy such depots as are necessary to be kept up, and thereby relieve more active men from duty in the front. I will not send them, however, without an intimation from you that they can be made available. You might be reinforced to some extent by increasing the standard of companies to the maximum number allowed by law."

On January 11, 1867, I wrote Mr. Durant that the City of Omaha had taxed the Union Pacific railway \$4600 and that the County taxes for Douglas Co. was \$10,000. I did not think they had any authority to make this taxation and asked instructions in this matter.

On January 30th, ¹⁸⁶⁷ General C. C. Augur having taken command of the department of the Platte, I wrote him in relation to furnishing escorts to the engineers and others. We hoped to stretch our forces from Alkali to Ft. Sanders and it was important that the force should go on the ground with confidence and well assured of ample military protection, and when we get settled, if Indian troubles diminish, or if the campaign north and south should drive them away from the Platte route, the protection would be diminished; but any scare or attack in the commencement would be fatal to us, and almost impossible to obtain the necessary laborers. My idea was that temporary camps should be distributed with the different grading parties every fifteen or twenty miles, as we put the workmen on the ground and for scouting parties to thoroughly scout the country north and south of the line to give ample warning of hostile bands of Indians.

You will find that the country between the Lodge Pole and South Platte which comprises the White and Pine Bluffs, Pawnee Cut Bluffs and Crow Creek country, have been heretofore great resorts for hostile Indians and really secure resorts, as it is in a country very little known until the last year, when we developed it by our

different engineering parties; also the country between Lodge Pole and Laramie Fork. Indians from this country have always made their dash on the overland routes up Platte and Lodge Pole. In this country we will have many parties getting out ties and they will need some protection.

I am well aware that the military authorities are doing all in their power to aid our enterprise; in fact, General Sherman has often told me that he considered our railroad the best solution of the Indian problem that could be gotten and was very anxious that we penetrate the country as fast as possible.

About March 1st, ¹⁸⁶⁷ I shall start out my engineering parties; two for the Black Hills; one for Salt Lake and should like by the 5th or 10th to have escorts ready at Ft. Sedgwick, Ft. Saunders and Camp Douglass for the engineering parties as follows:

Party going West of Ft. Sedgwick fifty men, twenty mounted, thirty infantry;

Party in the Black Hills five mounted, 20 infantry.

Party on the Laramie plains twenty mounted thirty infantry;

Party in Utah twenty mounted and thirty infantry."

General Augur in answer to this request agreed to place detachments from Alkali to Laramie River to cover our workmen at convenient places, not exceeding 20 miles apart and to cover the road north and south with the scouting parties so as to give notice of the approach of any hostile bands of Indians and also to furnish the necessary escort to the engineers.

On January 22nd, ¹⁸⁶⁷ I received the following letter from General Sherman:-

"Yours of Jan. 9, for some reason, did not reach me till today. I had nothing to do with Cooke's removal. The order originated at Washington and came to me completed, without my being consulted, and I do not know what influenced Gen. Grant, but never supposed General Cooke was in the least to blame for the Phil Kearney massacre. That post had been completed and the garrison increased to the largest estimate made by anyone up to that time, and I would have volunteered, to General Cooke that explanation, only the instant I sent him a copy of the telegram, he replied that he presumed I was the cause of his removal, which debarred me from making any explanation.

As to Augur, I only know him of his old army record, which was very good. He was always a favorite, and was, I think, one of Grant's comrades of the 4th Infantry. The probabilities are he will be in command of that department a long time, and will soon master all the questions, and be able himself, if necessary, in person, to lead his troops. You will lose nothing by the change, for I will make it

incumbent on the military to give an earnest attention to the protection of your road. You have General Hancock on the south of you, and Auguer with you, two of our best officers, and they shall have every man that I can get and spare. We are pressed for men at all points. I fear the political status has a tendency to make the men of property south oblivious to their own interests, for outrages on negroes and Union men south appear to increase. It is alleged, because the better people don't lend their help to stop it, as they say it is none of their business. If our army has to do all the dirty police work of the south, you can see it will all be absorbed there, giving us a small share of the army for the real public enemy - the Indian. But so far as interest in your success is concerned, you may rest easy, that both Grant and I feel deeply concerned in the safety of your national enterprise."

Mr. Hoxie wrote me from Des Moines that the Chicago, Rock Island & Pacific were at work west of that place; that they had located about 25 miles west, crossed the Coone river about 25 miles west and gone up what was known as the Quaker Divide. Mr. Johnson, the Chief Engineer, told him he had neither a map or profile made by either myself or Dey and could not find them, and was running a new line altogether.

This divergence of the line located by Mr. Dey and myself was a great mistake. It took them entirely out of their land grant and also crossed the line that was proposed to be extended from Oskaloosa West. This mistake was discovered too late to be amended and was always greatly regretted by the Company, and, as time has shown, it took them through a much heavier country, with greater grades, outside of their land grant and prevented the extension of their line from Oskaloosa west to Council Bluffs. The Dey's line ^{was} ran through Harlan to the head of the Mosquito and thence down that stream.

1867
On February 21st Col. M. R. Morgan wrote me that Gen. Hancock was preparing to make a campaign against the Indians on the Smoky and Arkansas. He said they were collecting supplies at old Ft. Larned, Ellsworth and Hays and General Hancock was going to take the field.

This was encouraging to us because the Indians to the south of the Plate were giving us a great deal of trouble.

On February 27, 1867, the Northwestern railroad reached Council Bluffs with their track. The road was then known as the Cedar Rapids and Missouri River Railroad. There was quite a gathering at Council Bluffs.

On February 27, 1867, I received the following letter from Gen.

Gen. C. C. Dodge of New York:

"After an absence of some time in Washington, I find on my return the "Nonpareil" of Council Bluffs, with your most admirable speech on the occasion of the opening C. R. & M. O. R. R. It would have been difficult to have condensed more stirring truths in language more direct or terse, and from the rapid development of your city and the importance of its location, its future does indeed seem grand.

It is almost frightful sometimes to consider in how short a time your western places spring from infancy to strong manhood, and unless one follows it closely, he finds himself far behind hand in the glorious march of progress."

I made a contract with Mr. John Duncan, the Representative of the Northwestern railroad, for opening up coal mines, to be known as the Northwestern Coal Company Co. at Boone, Iowa, for the purpose of supplying coal for the Union Pacific Road. These mines were owned by the people who were connected with the construction of the road. The coal was mined and furnished to the Union Pacific at a rate which brought no profit whatever to them. It was not intended that there should be any. These mines furnished the road with most of its coal until it reached the coal measure in Wyoming.

On January 28th, ¹⁸⁶⁷ I received the following letter from Mr. H. M. Hoxie from New York City giving me the condition of matters there:

"They are advertising for plans and proposals for building a bridge across the Missouri River at Omaha; plans and proposals to be received by S. Seymour until the 15th of February.

On February 5th, ¹⁸⁶⁷ Mr. Hoxie wrote me as follows:

"Mr. Dillon says they will commence work this year, when they get ready, and not before. Have not moved a bar of iron yet, and I am urging them to commence and send forward. I am getting rates for them over all railroads for locomotives. We have one proposition to take iron New York to Omaha for \$23.50 per ton, \$3.00 insurance additional."

On February 6, 1867, I received the following order from the Adjutant General of the Army:

Washington.

"Upon an application of Gen. G. M. Dodge, Chief Engineer Union Pacific Railroad, dated Omaha, Nebraska; Dec. 12th, 1866, the Commissary General of Subsistence makes the following recommendations which is approved by the Secretary of War:

"That for the current season's surveys the necessary supplies may be furnished for the engineering parties of the Union Pacific Railroad company not exceeding sixty in number, when the stores can be spared without detriment to the troops at the different stations."

On February 15th, 1867, General J. S. and D. T. Casement made the following bid for laying the track the coming season: ✓

"\$850 per mile, the transportation of material to be made and governed by us from the last terminal base."

On February 16th, 1867, I filed with the Secretary of State in Colorado, the organization of the branch line from the Crow Creek Crossing to Denver.

March was a very stormy month, with heavy snow storms, heavy winds which filled up our tracks and blockaded the operating of the road very effectively, as no arrangements had been made for protection against snow.

On March 7th, 1867, I wired Mr. S. B. Reed to open work on the fourth hundred by the 11th, covering the ground up to the end of the four hundred miles so as to be sure to have it done by the first of May. This was the beginning of the work for 1867.

On March 12, 1867, Mr. T. C. Durant wrote me in relation to the payment of Government transportation as follows:-

New York.

"Mr. Snyder has sent to this office the vouchers for the Government business over the road, in which Gen. Myers has inserted the claim:- "Not to be paid in cash but credited on account of bonds." I have instructed Mr. Snyder not to accept any more in this way, and if necessary, to bring this matter right, we must refuse to take the business, except as under the act of Congress which provides we are to be paid one-half in cash.

Snyder telegraphs: "The claim is inserted by order of the Quarter Master General at Washington." I think, however, the whole thing is a mistake and you can have it rectified at once. The question, I understand, was up before the War Department a short time since in settling the claims of the Eastern division road, and it was decided that one-half was to be paid in cash; that the rates were to be the same as charged individuals and the payments were to be made as of the 15th of the month in order to equalize the interest..

Please ascertain how this is, and if we require other vouchers."

The question of mail pay over the road was a difficult one.

Notes ✓ The overland Stage Companies contract for carrying the mails covered the railroad transportation and they were taking them over the railroad on that contract while we insisted upon the Government giving the contract to the overland mails from the end of the track and paying us our regular mail pay.

After quite a long controversy with the Government and the overland Stage Company we accomplished this .

The question of the termination of the Eastern base of the mountains was brought up in March with the Interior Department.

The Company was anxious to have a Commission appointed for this purpose, and to fix the East base of the mountains on the Camp Walbach, the Crow Creek, Cache la Poudre and the Berthoud Pass line. I thought this was unnecessary and I wrote the company that my opinion was that we should select a single engineer to fix the location of the line we were to build upon; that the Government had before them the decision of the Board adopting the Black Hills line. When I met the Secretary of the Interior and presented the wishes of the Company, he informed me that he had selected a competent engineer, Mr. Jacob Blickensderfer of Ohio, to determine the East base of the mountains. From the information I could obtain of Mr. Blickensderfer, he was a very competent, able and reliable man and I was perfectly satisfied with the appointment, so wrote the company and they acquiesced.

In organizing the engineering parties for the season of 1867, I had in view the location of the line from Julesburg to the Crow Creek Crossing and over the Black Hills into the Laramie Plains, and also an examination of a route from the crossing of the Laramie River to the head of Bitter Creek; north of any line that had yet been run and the extending of the Salt Lake surveys from the Humboldt Wells to the Truckee *on the California East State Line.*

During the winter, Mr. Evans' party had camped in the Black Hills, studying the slopes for snow and making a general observation there. Mr. Bates' party had been examining the outlet from the head of Salt Lake Valley to Snake River by the way of the Malade River and Marsh Valley with a design of obtaining some knowledge of the rim of the basin. They examined the Malade route enough to determine its impracticability. They were snowed in a great part of the time and were driven out on account of the storms and deep snow.

In January I sent orders to Mr. Bates to organize a party with Mr. Hodges as chief to run a line from the point where Bear River debouches into the valley of Salt Lake, around the northern point of the Wahsatch range, connecting with Mr. Reed's line in the valley of the Black Fork. A revision of the location up the Lodge

Pole and on the divide to the eastern base of the Rocky Mountains was assigned to Mr. L. L. Hills. The final location of the line over the Black Hills to Ft. Sanders was assigned to Mr. James A. Evans. The development of the country from Ft. Sanders to Green River was placed in charge of Percy J. Brown, under the supervision of Mr. James A. Evans with full instructions to develop the country between the Medicine Bow Mountains and Bitter Creek on the South and the Black Hills, Sweet water and Big Sandy Rivers on the North. These parties all took the field and proceeded to work immediately.

1867
On February 20th, I received the following letter from General Sherman:

"I have just received your letter of Feb. 8 and map. I now have an engineer officer with me, Col. Merrill, the same, you will remember, who went with Thomas as far as Atlanta. He will now be able to compile and make useful all maps that are authentic, and I will be obliged for all and any you can give me.

By this time you must be well acquainted with General Auger, and I hope you will work together like brothers.

I will want to come up to Omaha soon, and would like to have a pass over the road from Chicago to Omaha. I have a yearly pass over the Chicago and Northwestern road, but don't think that is the company that comes to Omaha. Do you know if the railroad from Keokuk to Des Moines will join the Boonesboro Road by the Main Valley or move to the west by the Coon Line of the Rock Island Road? All could save distance by making junction with the finished Omaha Road at a point in Carroll County. I am satisfied that our St. Louis and Missouri people are alive to the necessity and will, within 12 or 15 months have communication with Council Bluffs via St. Joseph and the Missouri Valley, as also by prolonging the North-Missouri Railroad to the Keokuk and Des Moines. Condit Smith is the contractor on both, and tells me he is making sure and good progress.

I think in another year, by these railroads and the extension of your Great road to the Black Hills (Sanders, if possible) and the Smoky Hill to the neighborhood of Cheyenne hills, we can act so energetically that both Sioux and Cheyennes must die, or submit to our dictation. This year we are forced to do the best we can, but I hope you will keep your men at work, spite of rumors, and even apparant dangers, for both General Auger and I will do all to cover the working parties that is possible, only we may consider it better done by combining all against the hostile Sioux offensively instead of keeping the soldiers close in, in sight of your men. I think with a little explanation from you, the working parties will understand that they are more safe along the Lodge Pole with our soldiers two or three hundred miles north, than if those same soldiers were close at hand."

The question of a permanent Superintendent of the road had been up for some time and I had recommended Mr. Webster B. Snyder, very highly, who had been acting as Superintendet and on March 7th received this letter from him:

"I am very much obliged for your dispatch and letter of Feb. 28th and for the interest you have manifested in my welfare and

promotion. If this Division of the Road is given to me, I will try and fill the bill.

I can tell but little of the N. Y. movement, yet have an idea of the parties who have been opposed to me. T.C.D. has certainly no reason to find fault as I have worked harder for him than ever for any other man. There have been a great many men here who have manifested a disposition to get more than was due them from the road and as far as has been in my power, I have tried to prevent it. They don't want me here.

Reed has gone to Chicago. Hoxie is here working hard to get material enroute. I fear we will not be able to do as much this year as was accomplished last."

On April 15th, ¹⁸⁶⁷ I received the following letter from General Sherman:-

"I got your two despatches from Chicago and Boone, and am very sorry at the general deluge, which cut you off from the East, and has prevented me from going out to the end of the track. I wanted to see you, of course, because I know you will not exaggerate the chances. You know as well as I do that the failure to transfer to us the management of the Indians simply makes it impossible for us to do anything conclusive, and sooner or later we must dispose of the Sioux. Knowint the previous nature of the Missouri River, I prefer to operate northward from the Pacific roads as a base, for the reason that it is safer than to work back, as Sully did, to the Missouri.

I want to feel a reasonable certainty that the road will reach the Crossing of Crow Creek this year. From thence I take it we must haul north, and I know that you may have to expend a good deal of labor yet on that finished part of the road, so as to diminish the chances of its being interrupted. I would much rather see it finished good to this base of the Black Hills, this year, than to have it slighted over to Sander. You know that Sanders will not be a good depot for Laramie. From ~~there~~ ^{Fort} the wagons would have to haul back this way over the Black Hills to get to the ~~Laramie Road~~ ^{Fort}, unless there be a wagon road straight from Sanders up to Fort Casper, or, better still, straight toward Reno.

I suppose we can count on the Sioux fighting from the Powder River and Yellowstone Countyk which will be better for us than if they go north of the Missouri.

I wish Gen. Auger had more cavalry, but it seems impossible for us to get more men; but if we can work past this year, I think the next we can finish up the Sioux, except as to their small horse-thieving bands; that may trouble us for years.

You saw that Congress would not let me clean out the Republican country. That may be all right, but I think a clamor will be raised in Colorado, Kansas and Nebraska, that will force it upon us. Under present instructions we cannot attempt it unless they break out into open war.

No matter what happens, my wish is that your road should be pushed to the east foot of the Black Hills, and then I don't care.

Wright and Shoemaker promise 250 miles west of Riley this year. Quien sabe? but I hope so."

During April we had great floods, which caused great destruction to the completed road. It cost \$50,000 to repair the damage done at the Loup Fork Bridge. The North Platte Bridge stood well and little damage was done. Between North Platte and Kearney the road bed was damaged in numerous places. East of Grand Island the water flowed from the Platte in a stream about one-half mile wide, cutting the road in two and sweeping with irresistible fury

over the country for twenty miles, then recrossed the track near Lone Tree, taking off iron, ties and embankment. At Prairie Creek the bridge was carried down stream. East of Shell Creek there are from four to six miles with nothing but ties and iron left. At Elkhorn river, about one mile of track was gone.

This was the highest water that we had any evidence of and the water had risen in all streams ~~running~~ into the Platte, beyond all precedent.

On April 19, 1867, the railroad company sent out a Committee consisting of President Oliver Ames, Sidney Dillon and John R. Duff, to accept the road in operation from Omaha to North Platte. Dr. T. C. Durant was with them. This was an unfavorable time for them to view the road, but if they were sensible they would see that the damages were only temporary. This party arrived in Omaha on the 27th of April. They remained there until May 6th. The Committee left Mr. Durant in Omaha and it was evident that he did not propose to push any work until the Committee made their report, but while they were here, we got the officers who were operating the road permanently fixed so that Mr. S. B. Reed, the Superintendent of Construction would only have new construction to look after. When the road was turned over to the Company to North Platte, the Company's engineers would look after repairs and the maintenance of that part of the road.

They gave me the following instructions:

"It shall be the duty of the Chief Engineer of the Union Pacific Railroad to take charge of all matters pertaining to the construction of the road completed and operated under direction of the company, the erection of all buildings, bridges, docks, and all extraordinary repairs. He shall submit to the President and Board of Directors in writing all plans for anticipated new work or for extraordinary repairs with reasons therefor with an estimate of the cost of the same, and no such work shall be commenced without the sanction of the Board of Directors or Executive Committee."

On April 29, 1867, I received the following letter from Government Director Jesse L. Williams giving me the movements of the party in control of the Kansas Branch: Cincinnati, Ohio.

"I am convinced that a broad and strong combination is being formed between the St. Louis, Cairo & Ohio Valley R. R. interests on the one hand, and the Chicago & Northwestern and Lake Shore interests on the other, for passing through the next session a bill giving efficient Government aid to both the Northern and Southern Pacific railroads. At the meeting of the Ft. W. & Chicago Road in N. Y. on the 22nd, Gov. Smith being on hand, Mr. Ogden urged with

all his persuasive force and influence, which you know is not small, that inasmuch as the Northern line was sure to be built, our Board had better favor it with a view to a share in the traffic which would reach Chicago through the Minnesota connection, and I regret to say that he succeeded in getting the Board to lend its sanction, though against the judgment of our soundest men, such as Lanier and Tilden. Mr. Harbergh did all he could to resist it, as I should, had I been present. J. Edgard Thompson, also a member of our Board, was, of course, influential in the same direction. Of course, other leading East and West lines north of the Flat Wayen, as well as the Baltimore and Ohio will favor the combination. And when the Southern members get fairly in their setas, I see not how this "log rolling" combination is to be defeated.

Mr. Ogden, whom I met at Pittsburg a few days ago, informed me that Mr. Thompson told him the Kansas line would diverge towards Sante Fe, not going even to Denver. If this is so, Colorado and the mining interest can look only to our line, and it will be well to arrange for a charter and for funds to build the branch.

From what is rumored of Indian difficulties, I apprehend that your locating parties will be hindered in their surveys, and that you will probably defer your reconnoissance to Salt Lake. If you can fix upon some central point of intersection for the line over Rattlesnake Pass, and the line or lines north of Medicine Bow, S. Pass say at or east of Bridgers Pass, could you not make through surveys to that point, so as to fix the location this summer for 100 or 150 miles west of Laramie River; then if engineering operations must be suspended further west and the location to Salt Lake deferred to another year, no delay of the work would result. But it may be that the Indian depredations will quiet down. The survey and comparisons of various routes, if made under apprehension of Indian raids, will not be thoroughly made."

On May 4, 1867 I received the following letter from Mr. J. Duff:

"I left the land mortgage at the Recorder's office in Omaha, with the copies, subject to your order. I should like to have it recorded as soon as possible as it is desirable to issue the bonds immediately for the purposes of the company.

Will you please make up a statement of the present condition of the land donated to the company, and what in your opinion is the proper plan to adopt to perfect the title in the company, and the best plan to adopt for selling them, what officers should be appointed to manage them, and I will get the directors to adopt it. We have appointed Mr. Snyder Superintendent and given him all the powers that he asked, and I trust that he will come up to expectations of his friends in the responsible position in which he is placed. The Committee all leave for home today and I should be pleased to hear from you at your earliest convenience about the lands. I suppose the Land Mortgage will have to be returned to the New York office and any of the blanks not used can be kept for future use."

J. L.

On May 10, 1867, Mr. Williams wrote me that our Eastern Committee were fortunate in being out just in time to witness the Missouri in its strength. I suppose they are satisfied that the Missouri is not to be fooled with or bridged in six months. I wish I could have been there to see. I am glad to learn that no great damage was done to the road, and that you lost no bridges. I had asked Mr. Williams if it would be possible for him to be on the ground during the whole summer and he said in his letter that it would be a little doubtful whether he could spare three months or more to accompany me. He said if my surveys of various comparative routes

had progressed farther, so as to present the important question in a shape for a comparative view, as was the case last fall between Cheyenne and Ft. Sanders, then it would be more important for him to accompany me.

On May 16, 1867, Col. M. R. Mogran wrote me from Ft. Leavenworth in relation to the expedition against the Indians as follows:

"Hancock's expedition is over and you know the result from the papers. A. J. Smith and Custer are out with the troops and it is supposed they will have enough to do when the grass is up. The Indian agents ~~were disgusted with it~~. There is no money to be made for them this season. General Hoffman was offered the command of the Indian territory but he preferred to remain in Leavenworth. General Davison gives up his staff position to take the command declined by Hoffman."

On May 16, 1867, Supt. Snyder wrote me that it would take three weeks to get the road all right and get rid of the temporary grades and bridges.

On May 20, 1867, Oliver Ames Wrote me from North Easton the result of the meeting of the stockholdres of the Credit Mobiler, who (controlled the contruction) of the road as follows:

Credit M → "Your telegram of the 16th is received in reference to 1st Mtg. It is already recorded in Nebraska. If you are going out the 1st of June or thereabouts, I think your suggestion to take it out then and have it recorded would answer all purposes and save expenses. I shall be in New York this week at monthly meeting of directors, and will consult with some of the parties who have more experience in these matters than I have, and write you. There was a meeting of stockholders of Cr. Mobt. at Philadelphia Saturday at which Durant, Williams and Gray were left off of Board of Directors, and Dillon, Alley and Hazard put on--Dillon to be President. I think that the new Board will have all the efficiency of the old, and will have the confidence of the stockholders and public, and will carry every needful economy into the construction of the road."

The Indians were getting to be very troublesome. The failure of Hancock to accomplish anything with them made them very aggressive and on May 20, 1867 I wrote General Sherman the following letter:-

Council Bluffs, Iowa "I am beginning to have serious doubts of Gen. Auger's ability to make a campaign into Powder River, and at the same time give ample protection to the R.R. the Mail route and the Telegraph. His forces are too limited to do all well, while they are sufficient to do one of them efficiently.

In the last two weeks the Indians have developed their game same as they did in spring of 1865.

1st. They struck us this side of Sedgwick and cleaned out two of our sub-contractors of everything they had and scared the workmen out of their boots, so they abandoned the work and we can not get them back.

2nd. They struck one of my engineering parties on Lodge Pole and took one pair of mules, and notified them to leave, pulling up all of our stakes, &c.

3rd. They attacked our tie men in the Black Hills and drove them off to Cheyenne burning up their traps &c; and also cleaned out one small party on the Laramie Plains.

4th. They attacked Mr. Brown's engineering party, on the 14th, at Rock Creek, killing one of his men, Mr. Stephen Clark of New York, taking his stock; and also killed one of the escort, and took part of their stock. While pitching into us, they burned the stage station called Fairview, between Morgan and Sedgwick; also burned stage station at Cooper Creek, and Rock Creek, west of Saunders, taking stock.

The mail will stop unless Auger will protect the stations. You know men will not run those routes with scalping Indians along them, unless troops are there to protect them. And we cannot hold our men to our work unless we have troops; and Auger cannot furnish them even after the road is built up there. Our station men will not stay at the tanks and stations, some 20 miles apart, unprotected.

The great difficulty is that Auger has only two companies of cavalry to scout that whole line, and seven or eight companies of infantry to protect 300 miles of opened work. Now, is it not more important to, this year, use his available force to protect our general line of travel, the mail, telegraph and stage, than to push north into a country that not a man will travel this season, and next fall or spring, when we are at Crow Creek, and you can get a mounted force from the southern states to make the northern campaigns. With the Cheyenne and Sioux of the South, hostile, playing between Smoky Hill and Platte, and Auger with all his forces far north, it seems to me we are at the mercy of the Red man. My engineering parties are driven into Sanders and Auger says it is impossible to now increase their escort, and they are working in the worst Indian country you have got. You must take into consideration the line over Laramie plains. It is the most exposed of all and where we have got to operate extensively this season. Would it not be best to garrison the posts of Laramie, Casper, Reno, Phil Kearney and C. F. Smith strongly, so that 200 to 400 men can at any time be massed to go after any bands and place all under an active man, and let him take care of the Indians up there? No white man or train, except government, will travel that route this year, therefore to take care of the posts, we have to go there and to hold the Indians up there is all that is required. Let Auger take the rest of his forces and operate along the line from North Platte west. He will then have force enough to give confidence to the workmen, the stage and the emigrants.

I submit this for you to consider. When we went into the Powder River country in '65, we took more mounted troops to hold open the stage route alone than Gen. Auger has got in his department, and he has got just as big a job on his hands now as we had then and larger, because the Indians have more confidence.

If Chas. Bent, or George, is with the Southern Cheyennes, they will play hell without completed road. We are now at Alkali, 40 miles west of North Platte, and I tremble every day for fear of a stampede. Have smothered all the recent attacks and kept them out of the press. Auger and myself only know it, but should our men get at the real truth, they will stampede. Stage agents, telegraph men, emigrants, tie contractors and R. R. men of all description out there are pressing for protection, and while Auger feels the importance of giving it, how can he if he moves all his mounted men 500 miles north? If the Indians south had kept quiet, I should have felt easier, but between two fires, with the temptation we are holding out to them in the vast amount of stock, provisions, &c. on the line, with such temporary means as we have to protect ourselves, I know they will give us grief. I know from a long talk with Gen. Auger that he does not feel competent to protect these routes and make the campaign. And knowing this, I have written frankly to you. I say nothing to any one else, because I am determined to go through to Crow Creek if we have to abandon everything else, no matter what the Indians do. I am going up on your road. Unfortunately, I am sick; have been for two weeks confined to the house, but my presence up there will give confidence to a portion of our men. If we can hold our men to it, we will be at Sedgwick in June.

If Auger had another regiment of cavalry, that alone would put him on his feet; but I know it is impossible for you to get a man, therefore I have very strong convictions that Auger should

put his energies on the great railroad route, while Hancock used his moveable force to follow and fight the Cheyennes and Sioux on the Arkansas and Smoky Hills. The Araphoes will soon be heard from. They are working towards Laramie Plains, and when they get to work we will have fun. To protect us from Sedgwick to Bridger's Pass, I do not see how it is to be done with less than a regiment of cavalry. And unless I can build extensively this season, we are tied up for next year. I am looking every day to have them burn our ties distributed up Pole Creek. We have been placing them on every one-half mile, 1300 in a place, and if disposed they could do us irreparable damage."

The progress of our work on the Black Hills was very successful. Evans had made his location.

On May 22nd, 1867; I wrote Jesse L. Williams in relation to this work as follows:

"I saw Snyder today. He said Gilman took hold well. If he does well, he would put him forward. He is now baggage master on a train. Said he would keep an eye out for him, and promote him &c. so you can depend on his taking an interest in him.

Have got location made over Black Hills. Party under Hills well up Lodge Pole. Indians bad; killed one man in Brown's party on Laramie Plains and stole some stock, but I will keep the thing moving, Indians or no Indians. Have increased Brown's escort and put him on his feet again. Have made strong appeal to Sherman to abandon all expeditions into Powder-River country and throw whole force to protect mail, telegraph, stage and railroad routes to Utah."

0-13 ✓
The young man in Brown's Party who was killed was a nephew of Mr. Thurlo~~y~~ Weed of New York. He was killed on Rock Creek. The party was encamped there and Brown had gone out ahead with most of the escort while young Clark, who had remained in camp, took a team, and with two soldiers and a sargent went out after wood. The Indians attacked him, killed Clark and the Sergeant of the escort and wounded one of the soldiers, but the men stood up to their work and the team until they could get to camp. One of the party describing the situation says:

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"The delay embraced an interval of 18 days caused by the murder of Stephen Clark and the Sergeant. We moved camp and the necessary equipment of the party to Cooper Stage Station. The weather was cold and disagreeable. Every few days rumors reached us from steagling mountaineers of the superstittious movements of the Indians. This cast a gloom over everyone in the party. The weather was unusually severe. It snowed for two consecutive nights. A series of wind-storms tore down our tents and continued with such force that they had to be temporarily abandoned and the little log station house, with its single room of scanty space, was made the headquarters of the party.

21
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At the Station there were tons upon tons of mail he^{dd} there because the stage was unable to carry it forward and the greater portion of the day time was spent in reading literature selected from the large amount accumulated there. All the letters had been carefully stored away in separate pouches and the rest of the mail was used for local purposes. The only encouraging feature was the increase of the military escort who were to act as scouts along the ^{line} outside of the escorts with the engineering parties.

The first day out, Lt. ^BBrown and his escort were missed for nearly one-half a day. Their absence gave occasion for considerable alarm. In the evening they turned up with the game they had been chasing, which in their excitement they had followed up, forgetful of the effect their absence might have on the party.

Our surveys for many miles were over a rolling prairie and we made progress at the rate of from six to eight miles per day. In the meantime, Percy T. Brown, the chief of the party, with five picked men, started out on a trip some 50 miles in advance with a pack-mule, camp kettle and saddle-bags to spend a week reconnoitering the passes ahead. Our progress was considerably marred in going over the rugged country near Rock Creek where great difficulty was experienced in finding a gradient that could be practically reduced to a slope of 60 feet per mile, the limit fixed upon it as maximum, if it could possibly be determined. This was finally accomplished but without calculating upon costly earthworks. The next difficult ground encountered was at Medicine Bow, a very rugged stream whose valley was ~~covered~~ with very high earthworks. Here the lines were marked out with great difficulty and the numerous bends were skipped by triangulation over the valley."

We reached a point which we called Lookout Peak. It was a very high rocky cliff surrounded by rock thrown up in every conceivable shape, with a very deep broad basin to the north of it resembling an extinct volcanic crater. Here the party became very much alarmed at the non-appearance of Brown and his men who should have returned several days previous. Evidence of Indians were seen and that only intensified the feeling. We pitched our tents on the highest point we could find and took every precautionary measure for laying in a supply of fuel and water to provide against attack or siege. After remaining there in hopes of finding Brown, it was determined to strike south to the California Stage line road. A note was left on a prominent rock with instructions to Brown and telling him where we had gone. On June 18th, the camp was hurriedly moved. Lt. — in the meanwhile with a small body of cavalry started out to search the country for the missing men but returned without success. At midnight to the surprise and relief of everyone, Brown and his men returned. They had been out ten days without tents or any shelter, buried in one study, that of the topography and finding a feasible pass over the Rattlesnake Hills. Brown was exceedingly pleased when he found a Pass with a moderate grade to the north of the old Rattlesnake Pass.

On May 29th, ¹⁸⁶⁷ I received the following letter from Col. Seymour: New York.

"Not knowing just how far you may be posted about matters here, I shall take the liberty of giving you a few items as they are passing.

Since returning here from Omaha, I have opened a correspondence with the Interior Department, and also with Mr. Blickensderfer, in relation to the eastern base question, and have been to Washington once upon that and other business for the company. The result is that Mr. B's final instructions were sent to him on the 20th, and he writes me a very kind

letter stating that he has a three weeks' engagement in Lancaster County, Penn., and after that, he will either come here, go to Washington, Chicago, or anywhere else that the Company or myself may desire in order to facilitate matters. This will take till about the 12th or 13th of June. I have just come up from reading the correspondence to the Board of Directors, which is now in session.

2204
The "Credit Mobilier" stockholders had an election of directors in Philadelphia on Saturday, and turned out Doctor Durant electing Dillon to fill his place, with Messrs. Alley and Hazard on the Executive Committee. Mr. Haven supercedes Messrs. Crane and Bunker in whatever they were doing in connection with that institution. As I was in the Director's room just now, Mr. Bell served a legal paper on the President, Mr. Ames, which I understand to be an injunction restraining the Company from recognizing, or doing anything under the Williams' contract. This of course is a declaration of war on the part of the Doctor, and what the result may be, God only knows. I really hope, however, that the matter may yet be compromised in some manner satisfactory to all parties, and that nothing will occur to interfere with the rapid progress of the work.

I am very anxious for the particulars of the Indian attack on Brown's party. I telegraphed you yesterday but get no reply as yet. Mrs. Seymour is very anxious about our son, and urges me to try and get him transferred to construction east of the mountains. If you and Mr. Reed can arrange this for me, you will lay me under great obligations, and pour consolation into the heart of an unhappy woman.

Please let me know what your arrangements are for your western trip. Secy. Otto informed me that he had arranged with the War Department for Mr. Blickensderfer's escort. Hadn't we all better go together?

2205
Mr. Sidney Dillon had taken Mr. Durant's place representing the contractors building the road and on May 20, 1867, I wrote him the following letter:

Council Bluffs

"I wrote Durant today about Indian depredations. I want you to get your men to work on the 5th hundred as soon as possible. I am afraid unless we do that, the Indians will burn our ties scattered along Pole Creek. As soon as we get ground broken up there, I can stretch out the military. I made out a list of lots held in Durant's name, included in the grounds that our shops are on the depot grounds proper for him to deed to the Company. That deed ought to be made and sent to me for record.

I wrote Ames recommending that 500 feet additional bridging be put in at Elkhorn. He told Snyder it should be done. Have Board act on recommendation, so we can work to it in our repairs. I have not yet time to get in estimate before meeting of Board, but it will not cost ten thousand. I put in a cedar pile opening; it is cheap and will last.

Repairs on road are progressing, and it is getting in good condition. House went over the entire line last week, and it has all the business it can do. Snyder drops me a line tonight saying last week will show \$40,000 Govt. business and over \$20,000 cash.

I have written Duff fully about lands, and sent him resolution to cover all. When you appoint a Land Commissioner, he ought to be a Western man and one fully posted. I think Hoxie would make a good one if he could be spared from his other duties.

N. W. R. R. is slow yet, but will get in condition soon. Dunlap, Perry, Turner & Co. have been out. I do not know what they did, as I could not get out to see them. Am just getting out, and as soon as Dr. will let me, am going over the work to Fort Sedgwick. The Missouri River is falling fast, and the bars show themselves all around

At Board I want you to make up your minds about getting property for terminal at South Omaha. Give me authority to get it. I will then pitch into the city and tell them, unless they obtain it for us, we shall have to look to other points and secure it before it is too late. Now is a good time to try them on. As they know, telegraph poles have gone up, and they think Child's Mill is a favorite place, and would jump at the chance to do anything that will tend to help the location of the bridge at their city."

On May 25, 1867, the Indians attacked the train at the end of the track; took six head of stock from Doolan, eight from Christian, and seventeen from McCoy, in sight of Lt. Hays' camp at Boyle's ranch, 65 miles west of North Platte; killed three men and wounded one; carrying off stock. At McArthur's camp, opposite Bowen's, Indians took 30 head of stock and killed one of McArthur's men.

The change of Mr. Dillon to the head of the Credit Mobilier in place of Mr. Durant created a great deal of opposition in New York and on May 25, 1867, Mr. Oliver Ames wrote me the following letter in relation to it:

Boston, Mass.

"The ejection of Durant from Presidency of Credit Mobilier has raised the very devil in that amiable gent, and he has come down upon us with injunctions, and proposes to visit us with every form of legal document to keep us honest. Such a lover of honesty and fair, open dealing can't bear to see the money of the U. P. R. R. wasted on such scoundrels as make up the balance of the Board of Directors. I cannot understand such a change as has come over the Doctor--the man of all others who has from the beginning stolen wherever he had the chance, and who is today, we think, holding stock, and a large portion of his stock, on fictitious claims and trumped-up accounts. He is now in open hostility to the Road and any orders he may give you, or any parties under you, should be entirely disregarded. Dr. Durant has been, and is now, seeking to favor other roads and other interests, and at our meeting yesterday it was voted that the power to direct action on the road should be placed in the hands of a committee, and that committee is Duff, Dillon, Carter, Rushnell and Ames."

My health had been poor for nearly a month but I have managed to keep around but I was now preparing to go out on the plains, thinking it would benefit me.

On May 27, 1867, I received the following letter from Mr. J. L. Williams:

J. L. Williams: Ft. Wayne, Ind.

"Your letter of 15th was forwarded to N. Y. and that of 21st received here yesterday on my return. On reading the first letter, I introduced a resolution fixing your salary at \$10,000 which was passed; no one objected. You have large duties. You must direct and let others act for you. In your state of health, allow me to suggest that you have always a very competent agent or clerk at your side. You can keep him busy with correspondence, collections, drawing up papers, etc. Let your time and strength be spent, not in drudgery or penmanship, but in dictating and directing the pen or the act of another. I at one time covered the whole State of Indiana, as Chief Engineer embracing 13 different lines of public works, and know what it is.

No doubt you have heard from New York. They had left Mr. D. out of the Credit Mobilier. He then obtained an injunction against doing anything under the Williams contract. It looked as if the work must stop. But we got up a resolution for a committee of five who shall proceed to sublet the work for the company, and I suppose the grading up Lodge Pole is let by this time. Thus the Court was respected.

Mr. Blickensderfer says he can start out by 15th or 20th of June. His mission is most important of all. He will no doubt want to traverse the Black Hills and go to Denver, and may want to go to Bridger's Pass. To make him feel perfectly easy, you should see that he has an ample escort. Col. Seymour is promised an aide for escort

Credit M.
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from Washington, but of course the men will come out of Gen. Augur's force, already too small. As your time of leaving is about the same, could not all go together up the line, or as far as Fort Sanders at least, under the same escort, having it large? This you understand best. Will not the time lost by Mr. Brown's party delay your time of starting? I notice in your letter to Mr. Ames you name latter part of June. But this was before Brown was attacked. Will you start before July. Give me time as near as you can.

If I should have to forego the pleasure of the trip to Utah with such a company, no one could regret it so much as myself. I hope to be able to go. The great length of time from home and from business is the chief difficulty. In the present troubled state, I should probably have to remain in Utah as long as you would, so as to have the protection of your escort back. This might take me from home 8 or 10 weeks. How long do you expect to be absent from Omaha? When do you leave? Does Rawlins' go?

In writing to Mr. McCulloch from N. Y. I gave my views of the foreshadowed Indian troubles, and gave my opinion, in that the Powder River force ought to be brought to the Railroad line. I enclosed a note to Mr. McCulloch as you suggest.

No definite recommendation was made by Bridge Committee. They all seem to be afraid of it. I suppose it must settle down to a low bridge above town or a high bridge below town, as Dey suggested. At either point, it is no 6 weeks or 12 months' matters. I have no faith in anything being temporary. It is a big job, and a plan must be gotten up that will command outside capital.

I want to see the Rogers report. Who is Rogers? Will the Snowy Range yield to his logic, and get out of the way? Will the Rocky Mountains skip like lambs, to use a Bible expression?

I have a business case at Terre Haute, 4th June, and at New York 14th of June. Would like to know your probable time of starting that I may decide whether I can go East and still join you. Please write."

I have been urging upon Mr. Ames the importance of letting the balance of the road to the base of the mountains. Nothing had been done since the committee had been there, and since the relieving of Mr. Durant and I saw that unless this was done, we would be overtaken by the track and on laying these matters before Mr. Ames on May 28, 1867 he wrote me as follows:

New York.

"Your favors in reference to Elkhorn Bridge are received, but not in time to lay before the Board. You will please go on with the work required to make the structure all that is required to put it in condition to stand any flood liable to occur. The foundation of the pier that was defective should be made secure, and all other things of like character on the road should be fully repaired.

In regard to letting out the balance of the road to base of the Rocky Mountains, it should be at once done, and Mr. Dillon is now on his way to Omaha to let the work, and you will proceed with all repairs not involving a large expenditure of money and not of great importance without advice from this office."

I had been handling the lands and lots of the company under my general order as chief engineer. When I came to make contracts, they required a more definite action and on May 23, 1867, the company passed the following resolutions giving me full authority:

Mals ✓
 "Be it resolved by the Board of Directors of the Union Pacific Company, that Grenville M. Dodge, Chief Engineer of the Union Pacific Railroad, be and he is hereby authorized and empowered as the Agent and Trustee for said Company, to lay out and locate on behalf of said company, towns and town sites along the line of said road at such place or places as shall be deemed most practicable, to cause the same to be surveyed; to make, acknowledge and cause to be recorded in the proper offices maps and plats thereof; and as such Agent and Trustee to sell and convey by all proper contracts, and convey lots in said towns and town sites and to deliver the same to the respective purchasers thereof, and put the said purchasers in possession of the same; and be it further resolved, that in the performance of all or any of the acts aforesaid, the said Union Pacific Railroad Company does hereby, and will indemnify and hold harmless the said Grenville M. Dodge, acting as such Agent and Trustee, against all loss, damages, costs, injury charges and liabilities of any character whatever, which have heretofore accrued or may hereafter accrue to him, by reason of any act or thing done in pursuance of, or under color of his authority as such Agent or Trustee, and this resolution is to have all the force and effect of a "Bond of Indemnity" executed by said Union Pacific Railroad Company to said Grenville M. Dodge for the uses hereinbefore mentioned.

Oliver Ames, Pres. Pro Tem."

Mals ✓
 On May 27, 1867 I accompanied the three Commissioners, Colonel Simpson, Dr. White and Frank P. Blair to the end of the track for the examination of the line from the 305 mile post to the 345 mile post. After the examination of this line, we ran out to the end of the track some distance beyond in the Lodge Pole Valley and arrived there just about noon, just as the men were off from work eating their dinner and in sight of one of the military companies, when a large body of Indians, one hundred or more, swept down on to the grading parties, in plain view of us, cut out several of their mules and horses and got away with them before the graders could get to their muskets, which were stacked along the work. This was a good opportunity to impress upon the Commissioners the condition we were working under. With all the aid of the military, it looked as though our work would be stopped and our engineering parties broken up. The Commissioners sent a very strong appeal to the Government to put more troops on the plains to protect the work. I was in hopes this would bring the military more forces, and while it drew the attention of the country to us, still it seemed impossible to get an increase of the forces on the plains.

Mr. S. B. Reed who was with me, said he thought it was impossible for him to hold the forces unless he got more support from the military but I told him that the men defending themselves were of far more benefit than the troops that could be gotten there. Most of

the men had been soldiers and I told him he must insist on their falling in and fighting for the purpose of protecting themselves.

I had a talk with the chief graders who came to the end of the work and I told them very frankly that the military was doing all we had hoped for but they ought to be ashamed of themselves to let a lot of Indians run down and steal their stock while they had five times as many men as the Indians and if necessary they could put a picket out on each side of the bluff to give notice of the Indians, as they knew the condition of the country when they made the contract. This they agreed to ^{this} do and went away thoroughly satisfied that everything was being done that possibly could be done by the military to protect them.

By making a strong appeal to General Augur, I finally got three additional companies of Cavalry stationed along the line for scouting purposes north and south of the line. This I preferred rather than to have them located at stations with the workmen.

On May 29, 1867, (I received a dispatch from Mr. Oliver Ames that the Durant injunction had been dissolved; that Durant was gone, supposed to Omaha ^{for me} to advertise Dillon's election and that the committee, naming them, had power to contract for Union Pacific R. R. notifying personally banks and all officers of both companies that Durant has no authority.

On May 30, 1867, I received the following letter from Mr. Ames in relation to the changes and giving me instructions as to what should be done:

New York.

"We have telegraphed you to act in the matter of Davis and transfer of iron across the river. As you have now Dillon with you and have full authority from both Companies, don't let the interests of the Company suffer by incompetent agents.

We also want you to give every proper aid to the Wade excursion party, and as Durant is out there, to give all his attention to these men and to curry favor if possible with these gentlemen. We wish to have Durant's present position in U. P. R. R. well understood. He is now hostile to the road and will do everything possible to injure its progress. You will be able to meet him at all points, and, with Dillon checkmate him. His injunction has been removed, and if he should attempt to renew it in the courts there, it will be well to inform them that there is no injunction.

I feel that as soon as we get up to Julesburg, where I understand there is a very good ford of the South Platte, we should accept the road to that point and have our stations gotten ready, so that everything should go off promptly, when we accept and run the road to this point. ^{Control} all the road to base of Rocky Mountains, if you can do so, at reasonable rates. You can draw for ten thousand."

On June 4, 1867, I received a letter from Col. Seymour from Chicago telling me he had returned for the purpose of meeting Mr. Blicksderfer who was going to the mountains with me to locate the Eastern base. He also asked for the line in detail over the Lodge Pole and over the Black Hills, profiles, maps, etc. so that he could judge of the effect which any slight change, that may be suggested, may have upon the profile or cost of the work. I knew from his former action that this was simply to try to criticize the line and force changes. I sent him everything he asked for.

On May 7, 1867, I received the following letter from General Sherman giving me an account of his proposed visit to Europe:

St. Louis, Mo.

"I have your valuable letter of April 28, and am fully convinced that you will finish that road this season to the head of Crow Creek, and it may be to Fort Sanders. Where the spring has been so prolonged, I think you may safely count on a late fall. I will not be surprised if you lay rails up to Christmas.

I think this year is our crisis on the plains, because every month and year will diminish the necessity for troops in the reconstructed states and give us more and more troops for the plains, especially cavalry. If we could check the universal disposition to cry out for help, we could even now direct more men to the real points of danger. General Auger is bound to make the progress of your road safe, because it is the military base for the future, and the only difficulty he will have will be to prevent sending off more and more of his troops to those remote places where the people clamor for protection. At this moment, there is an appeal from Montana where they have a telegraph. Many ask for help, little thinking it takes two or three months to get soldiers there.

We were all disappointed that Congress would not transfer to our custody the Indians. It would give us more work; but as soon as any trouble arises, why the agents drop the Indians and call on us. But the real reason why we should have the control of the annuities is, that by means of the money already appropriated for the treaty Indians, our post commanders would have the means to find and take care of the Indians who don't want to fight. Whereas, now the ~~Vascales~~ who are off all year on hunting and war parties, come into the agencies at the time for the annual payments, and receive just as much as the better disposed class. This money, or the goods and provisions, ought not to be given annually, or semi-annually, but rather daily, or weekly as the Indians need.

I suppose I am in for the excursion up the Mediterranean. We are advertised to sail for Gibraltar June 8, and ought to reach Marseilles July 4. We are then to cruise along the Mediterranean and Black Seas, stopping at Genoa, Leghorn, Naples, Athens, Constantinople, and the Crimea (Sebastapol); then out to Smyran, Beirut, Joppa and Alexandria, back to the coast of Spain and out to Medina, and home in October. If you will keep Nichols here advised, he will reach me through Gen. Dix at Paris, and I will arrange for Gen. Grant to telegraph me; should anything of enough importance occur to call me back, in which event I will be prepared to leave the ship and return via England. My department is now well commanded, and should any combination of the troops be necessary, General Grant will order. I would not go if I thought anything would suffer, but it is vain for me to suppose my absence necessary, when Gen. Grant freely offers to spare me. I will bear in mind your wish, and will write you some letters from abroad as a keepsake, and as evidence of my personal friendship.

On May 27th, 1867, General Sherman made answer to my numerous letters and dispatches, calling for additional support on the plains, as follows:

"I received your dispatch and now have your interesting letter of May 20.

1 I have had a good deal of correspondence about the protection of the country along the railroad, which I deem of the first importance although to make it effectual I see no other way than first to attack the Sioux who remain near the Yellowstone in defiance. If they remain, as a matter of course, they will not confine themselves to attacking the trains that go to supply Phil. Kearney and C. F. Smith but will come south to your road. I think Gen. Auger should go there in force, and we must also get other troops to defend our working parties. I have asked Gen. Grant for another battalion of cavalry for that special purpose, and if he can he will grant it. You know that the same call comes from every other quarter, and it is very hard to say which is of most importance. I wish to assure you that I do not under-value your work, for, on its account, I give up my proposed trip to Europe, but if I can, will come up this summer and attend to it in person; but I know that of myself I can do little without a force in reserve, and that I will try and obtain. If the worst comes to the worst, I will call on Nebraska for a regiment of mounted troops, for the special task of defending interests which are vital to her progress. I don't want to do this if it can be avoided, as every state and territory that has contact with Indians will raise a clamor, as has been done more than once, for local troops serving in their own interest. One would suppose more of the regular army should be among the Indians where danger is imminent, instead of in Southern cities such as Mobile and New Orleans, but when Mr. Kelly can announce that he can have all the regular army to back him in his speeches at the South, we see that there is a call for troops there, on questions that Congress thinks as vital as those of the Indians. I have the same appeals from Minnesota, Montana and Dakota, as well as from Kansas, New Mexico and Colorado. Each wants enough of the army to guard them against all the Indians, but I note your road as of the most important and have given Gen. Auger a very large portion of my whole command, but will increase it if I can get the men."

On May 21, 1867, I wrote to Mr. L. L. Hills as follows:

"When you finish ^{your present work} the country between Lodge Pole and Crow Creek will require study, especially towards Crow Creek. It is thought by some, we can find a high crossing at Crow Creek and avoid the depression we get into falling into that stream. I do not believe ^{it} can be done but we should get a line that gives us the natural ^{decent} from summit east of Crow Creek to the valley, which is about 40 ^{feet to the mile} thus throwing out all the undulations directly east of Crow Creek."

I received a letter from Mr. Thomas H. Bates dated May 15, in which he suggested that before we settled our line over the Wasatch mountains, we should examine the outlet from Soda Springs at the North bend of Bear River to Snake River and the facilities of getting from Snake River to Thousand Springs Valley, west of Salt Lake. He suggested this to me for a controlling influence on the line we may decide upon in crossing the Wasatch Range of Mountains but this was taking us too far out of the general direction but I intended to examine this line when we made our surveys towards Portland, Oregon.

In answer to his letter I wrote him as follows:

"I am not prepared to order the surveys from Soda Springs and Snake River as suggested by you." I asked him if he considered the line going by way of Ham's Fork, Bear River, Snake River and Goose Creek to Thousand Springs Valley as the main line to the Pacific and to compare with the line south of the lake and immediately north of lake, namely Promontory Point, Spring Valley, etc. Is there no way of crossing Promontory Ridge that you turn to the South? Can it be crossed north of the Lake? If so, how far?

I am now confined to my house and have been for some time suffering from an old wound. As soon as I am able, I expect to start West and be with you a portion of the season."

Mr. Hills had written me asking to have provisions sent out to him and on May 23, 1867, ^{answered} "we have no means of getting the

provisions to you. You will have to purchase at Denver and La Porte. When you get through to Crow Creek, I intend to order you back by telegraph to this end of the 5th hundred to rerun the adopted line restake it and number it consecutively, We find a discrepancy between your levels and Brown's of three feet, yours being 3 ft lower." Brown's party was attacked at Crow Creek and one man killed--Stephen Clark of New York. He was away from camp and picked off; therefore, be careful, vigilant and make your men the same."

On May 27, 1867, I wrote the following letter to Mr. Ames:

"I returned from the grading today. While I was up there the Indians attacked us at five different points, and between North Platte and Fort Sedgwick took about 100 head of mules. Most of them belonged to parties travelling along our line. They killed three men along on our work, wounded one, also killed four up Lodge Pole, about 40 miles west of Fort Sedgwick. They are giving us trouble daily; but I have got our men armed, and am pushing cavalry into the country to protect them. The fact is, we must have a regiment of cavalry to protect the line. Now we have only two companies, and they have no men in this department that we can get."

If our men grading on 4th hundred get out of work and come back here, we never can get them back there. Therefore, I would give them immediate notice that the work on 5th hundred will be put under contract immediately. With this, I can hold them up there until you let the work. As long as they have something to do, they do not get panic stricken; but the moment they are idle, all Indian troubles grow and they get away as soon as possible.

The commissioners accepted 40 miles of work. It is the best constructed forty miles of track that I have seen laid on the road. The telegraph line, too, is excellent."

On May 30, 1867, I also wrote Mr. Ames on general matters which I thought required his attention:

"I found on my arrival home your telegram and your letter. I had been out over the work before I got them. I went as soon as I could leave the house."

The Indians were so bad, ^{that} the Commissioners stayed and saw the last rail laid to the 345 mile post and accepted the road to that point; they will return 20 miles today and as soon as they get notice, from Leavenworth or where they are, the other twenty. Under their orders they must have notice from the Secretary of the Interior before they can report on any section. I proposed to them to go and see Browning at Quincy and get him to revoke that rule, so that they could examine all finished up to the day they accept, and I think they will get the order. They expect to receive the order for this last twenty before they get away.

In answer to your letter: When I took charge of the engineering Dept. last year, no accountability of parties was required. This year when they went out, I invoiced to chief of each party every article that they took with them and had them receipt for them, so

they are held to a strict account for all they have. Camping outfits only last one year; tents, blankets and buffalo robes generally rot or get worn out. We save a portion of each every year. This year I armed the parties with Government arms, but they were useless and I had to get others.

The freight charged to Salt Lake of .65 cts. a pound is Wells, Fargo & Co's charges for instruments, maps and profiles sent to parties out there; and I desire to say that Wells, Fargo & Co. show us no favors, and in return we make them pay over our road for everything we do in their line.

Everything goes smoothly here except transfer which should be placed in Hoxie's hands. He can handle it, and I know no one else that can. The transfer of passengers by the North Western Road is a botch and a great detriment to us, as everybody charges their delinquency to our road. Hoxie might take them right over on his boats in addition to the other transfer. They have a contract with Mr. Bullins and suppose they will stick to it. Bullins puts passengers in coaches and hauls them around through the mud to the boats. The ferry, I guess, gives them no facilities, as they want the job, and all around they make travellers mad and we get the credit. Snyder is endeavoring to make a change to help it.

I shall send in a full report of repairs needed this week, stating the extraordinary ones. The minor repairs are going steadily forward."

On June 5, 1867, I wrote to Mr. S. B. Reed in relation to the grading of the fifth hundred miles as follows:

Omaha.

"I submit herewith profile and notes for 50 miles of 5th hundred. You will see that in the light cuts I have noted, "take out 100 feet wide," the material is intended for banks. Have endeavored to balance work at such places; at a few others have marked fence cuts. I think it will be well, at the light cuts where material has to go into bank, to take out 75 feet on north side of cut and 25 feet south side of cut; but to pay extra for it when material is not needed, it will be cheaper to fence.

On making up quantity you can determine, or if work is let at 30 to 35 cents, cut and fill can be let to balance, say fill 14, cut 16. This would leave it optional with sub-contractors to borrow and waste, or haul if wasted. You can put, as you have heretofore done, in ridges and side of wide cuts.

I also request that Mr. Casement be instructed to watch careful the alignment to see that it is all right; it is very broken, and I do not wish to have any bad alignment, if it can be avoided. They will be on the ground and could notify us of any changes that they think would help the line. The line up where bad alignment is, was changed by engineer in charge, at west end of cutting and he did not swing the tangent coming from west, which should have been done at east end of cutting where large bend is. I have not had time to re-run line to see cause of that. There is a large amount of water way on 5th hundred. Mr. Hills is very positive that it will all be required. It will be well enough to see if some of it cannot be reduced a little or avoided by side ditches."

Mr. S. B. Reed had made his permanent headquarters at North Platte and had brought his family there. Mrs. Reed in writing says:

"This is a curious place. Please read "J. Ross Brown's Description of Washoe" and you see North Platte as it is. Today the hostile Indians are the all absorbing topic of conversation. They are committing constant depredations and not unfrequently killing people. Gen. Sherman is west of us; indeed, was expected to meet the party from Chicago and must see the necessity of active measures against those cruel savages. I do not fear at present for our personal safety here, but after the mass of the people go up to Ogallalla or Julesburg, there may be decided danger. Sunday morning over sixty persons left for Salt Lake and intermediate points, after being detained here over a week. Bishop Tuttle (recently consecrated Bishop of Utah, Montana and Idaho) and clergymen with two ladies

were among the number. The Bishop held service in our rooms before leaving. The occasion was a solemn one and all present felt that the voyage was a perilous one. It was unfortunate that there should have been so many women and children--between twenty and thirty in number. I will not distress you with a further description of our Indian experiences."

On June 6, 1867, Mr. Oliver Ames wrote me as follows:

"Your favor of May 31st with Omaha papers of same date is received.

The thing is now all right, and the people of Omaha must understand that T. C. D., V. P. and General Manager, has not the entire control of the U. P. R. R., and in the new organization I think we shall see a more vigorous prosecution of the work and with more system and economy. I, and all in connection with the road here, have never been so sanguine of the success and great merit of this road as we are since Durant has been put out of its management.

We are now selling from 15 to 20,000 dollars of our bonds daily, and are getting our money at much better rates than formerly. The moneyed interests here have now much more confidence in us and will, I have no doubt, soon be applicants for our paper.

We are going to have our iron punched and put down the 56 lb. iron with fish joints."

I had written Mr. Ames fully in relation to the success of our located line over the Black Hills and the necessity of pushing the work we were to reach Ft. Sanders this season as planned and on June 13th, ¹⁸⁶⁷ he answered me as follows:

"Your favor of June 7th in reference to road over Black Hills is received, and we are greatly pleased with the very favorable aspect that it bears. I am only fearful, if the thing looks so very fine, that it may influence the judgment of our Mr. Blickensderfer in fixing the base of the Rocky Mountains. I do not see, however how he can materially change it. It would hardly be proper to fix a point in the Black Hills as the base of the Rocky Mountains, that will carry us far beyond the summit and down their western slope. I agree with you entirely in the importance of pressing forward the work, and if we can carry the road 50 or 100 miles up the slope of the Black Hills, we can get the base fixed there we will be justified in pushing the work. If Mr. Blickensderfer should take the view of this matter that is taken by the Government directors, and strongly feel that the necessities of the Government and country demand the early completion of the road, he will not fail, I think, to fix the point where you and Mr. Williams have supposed it should be. It would be well for you to press these points upon Mr. B. and the agitated state of the country there will do much to satisfy him that Government aid should be most liberally extended to this great national work.

Mr. Duff and myself have been carefully reading over your letters, and we most heartily concur with you in the idea of pressing forward the construction of the road with the utmost vigor.

In regard to urging upon the Government the sending of a larger force to protect us in the construction of the road, we think it is the clear duty of Government to do it, and suppose that any requisition made by Gen. Sherman or Gen. Auger upon the War Department would be promptly answered. Whether the Secretary of War would feel any national obligation on a request of ours to grant aid in this matter, is questionable.

We hope when Mr. Blickensderfer gets out to Omaha you will give him all reasonable despatch, and have him feel that he is having all the consideration due him as a Government commissioner."

They had sent me the mortgages of the company for the purpose of having them recorded in every County. As there was no organiza-

C. Mahlin
note

tions of Counties, there was no place to record them. We had established towns and in answer to my question as to the process I should pursue, Mr. Ames wrote me the following instructions;

New York.

"The mortgage must be recorded in every county in, or through which the railroad runs. Wherever the line is not within any county, the recording in an adjacent county is of no use, unless there be a territorial statute there authorizing the recording in adjacent counties or nearest registry office. I know of no such statute.

I should advise that the mortgage be recorded with every county Clerk or register, through whose county the line runs, but no others; and that if the line, anywhere, is wholly outside of the bounds of counties, then the mortgage be recorded at the Capital of the territory with the Secretary "or other officer of records."

This Mortgage, Gov. Morgan is very uneasy about, and it must be entrusted only to the most reliable parties and recorded and returned here to the Trustees with the least possible delay, or we shall have trouble with Gov. Morgan."

On June 20, 1867, he wrote me in relation to repairs on the completed road and the pushing of the work as follows:

New York.

"Your favor of 14th inst is received. I should hardly want to jeopardize the bridge by letting it remain as low as it is now, when raising it two feet would probably put it out of the way of any ice gorge and be much cheaper than to put in a new pier. When we were over the road with Reed we thought the better way would be to raise the bridge two or three feet, and the approaches to meet which could be done at a very trifling expense compared with a new pier and truss. I hope you will look at this matter again, and if the bridge will be as safe with the additional raising of it three feet, as with a new opening of 200 ft., I should raise it or if it requires both, they should be done, as the bridge should be made safe at all events. We, of course, must rely on you, who are on the ground, to look over the matter, and be guided by your judgment, trusting that the best and most economical plan will always be adopted.

You will, of course, see that all the proper repairs to the accepted road are made, and will press Reed up to the most active exertions in his department. We must push the road to the Rocky Mountains this fall, and as far in them as possible this season, and push the grading during the winter on all the cuts where work can be done without interference by frost."

On June 22, 1867, I received a dispatch from the commanding officer at Ft. Collins, Colorado, telling me that Mr. L. L. Hills' party making the surveys from the Lodge Pole Creek across to the Crow Creek Crossing had reached there under charge of Mr. J. M. Eddy; that Mr. L. L. Hills had been killed by the Indians attacking the party and Mr. Eddy, after the death of Hills, had rallied the party and saved the rest of the outfit and wanted instructions from me. I immediately inquired about Mr. Eddy and was told that he was a soldier of the 13th Illinois Infantry and had served under me during the war. I instructed them to have the party return and meet me in the Lodge Pole Creek Valley.

On the 27th of June, I started west for the purpose of looking

As Hills turned and rode back to his men, he was literally pierced with arrows. His companions escaped by running in the opposite direction. Hills was paralyzed from fright. Hills was a very able and competent engineer and was a relative of Mrs. Byron Reed of Omaha. This news caused some despondency in our camp but had it insured precaution, which it should have done, it would not have been without good results, but the peculiar changes and wild nature of our explorers lives, however gradually, begets a degree of carelessness which seems almost inexcusable.

over the line and visiting that portion of the country which I had not been over. I left the end of the track on the 28th of June accompanied by Mr. Blickensderfer who had been assigned by the President to determine the East base of the mountains under section 20 of the act of Congress of 1862; also by ^{Genl.} John A. Rawlins, chief of Staff of the U. S. A. Mr. John R. Duff, the son of Mr. Duff, one of the directors of the Union Pacific Road; Mr. Rogers and Mr. Corwith, ^{of Galena} friends of ^{May Dunn Adc to Gen Rawlins} Genl. Rawlins, Col. Silas Seymour, Consulting Engineer, who was accompanying Mr. Blickensderfer under direction of the company. Mr. S. B. Reed, the Supt. of Construction, Gen. J. T. Casement, Contractor for ^{laying} the track, Mr. T. J. Carter, Government Director and Mr. James A. Evans, Division Engineer. There was also with us General C. C. Augur and a portion of his staff, who were accompanying us under the direction of General Sherman to establish a military post where I selected our Division headquarters ^{at East base of mountains}. General Rawlins had as an escort two companies of Cavalry under Col. J. K. Mizner with Lt. James M. Wheelan and Dr. Terry. Most of the party were taking advantage of my escort to get to their work.

I pushed on up the Platte and Lodge Pole Valleys along the work as rapidly as possible examining the line and entered the Crow Creek Valley and pitched my camp at a bend on Crow Creek now known as the city of Cheyenne where I combined Maxwell's and O'Neil's parties under Mr. Evans for the purpose of finishing Hills survey from Pine Bluff to Crow Creek Crossing. This was a difficult location to make as I required that there should be no grade exceeding 35 feet to the mile, desiring to make that a ruling grade from the Missouri River to the Eastern base of the mountains. I learned ^{the particulars} here of the death of Mr. Hills ^{near Hillsdale Station named in his honor}, that he was a short distance away from the party when a band of Arapahoes attacked him. ^{Insert (1)} One of the party escaped to return to the ~~remained~~ of the party and young Eddy, as soon as he learned of the death of Hills, although an axeman in the party, got the party together and as they were armed, prepared to meet the Indians. As soon as the Indians left, he took the party to the nearest military post, which was at Fort Collins. I

saw that Eddy was a very bright young man. He entered the service when sixteen years old and went through the Civil War. I immediately promoted him and gave him charge of the land and lot matters in my own office, where he was of great service to me and stayed with me for several years, finally going into the operations of railroads, was General Superintendent of the Southwest System and died in the service. *Suggs, James P. 1845-5*

I found, on arriving at Crow Creek, that not a days' work had been done by my engineering parties since Hills was killed and I had to remain here at Crow Creek until I had 31 miles of line between ^{Pine} Bluffs and Cheyenne located and connected up with the Black Hills line. I selected the ground that Cheyenne now stands on as our terminal at the east base of the mountains. General Augur selected grounds about ~~one mile or~~ one and one-half miles north of Cheyenne for the military post, making quite a large reservation. The Post was named D. A. Russell. I selected here for railroad grounds about 320 acres of land in addition to the land selected for the town of Cheyenne. General Rawlins had accompanied me across the plains on an invitation given him at a suggestion of General Grant, who thought it would be beneficial to his health. General Rawlins was suffering from incipient stages of consumption and as we travelled over the country and got into a higher altitude, we could plainly see his improvement. The 4th of July was spent at Cheyenne and the party got up a celebration at which there was quite a large attendance of military, railroad and mountaineer citizens and Indians. There was two companies of Pawnees scouts who were protecting the line camped here, in addition to our other troops and General Rawlins made a very eloquent and appropriate speech in commemoration of the day.

On July 5, 1867, a grading outfit from Utah ~~which was~~ going on to the 5th hundred miles to work, came down through the Cheyenne Pass and along the trail at the base of the Black Hills, just as they came in sight of our camp, a band of ~~Siou~~ ^{Siou} Indians rushed out of the hills, attacked the train and killed two or three of their men and got away with a part of the stock before our cavalry got

saddled and got after them. The rest of the train escaped. These men who were killed here were buried on the town site of Cheyenne and were the first inhabitants of that city.

This boldness of the Indians, right in the face of the troops encamped all around there, made a great impression upon General Rawlins and others of the Army. They appreciated how impossible it was to build a railroad in an Indian country without having full protection.

Mr. M. F. Hurd, Assistant to Mr. Reed on Construction work, started with a train with provisions for his party on the Black Hills. Col. Silas Seymour, the Consulting Engineer who was examining the location of the Black Hills started with them and they had one of the Companies of the Pawnee Scouts as their guard. When they reached a point about ten miles west of Cheyenne, the Pawnees discovered this band of Sioux Indians down in the valley of Crow Creek and they immediately left Hurd and his train and went after the Indians. Mr. Hurd, who was an old soldier, immediately corralled his train and got ready to defend it with his teamsters. The Pawnees followed these Sioux and took several scalps from them and recaptured the stock which this band had taken from the ^{Mormon} train and came into camp in great glee, thinking they had accomplished a great feat but I gave them a very sharp reprimand for leaving their escort of the wagons and going after these Indians; that they should at least have left a few of their number to protect the train, but my talk did not keep them from having a great jollification and scalp dance.

Mr. Blickensderfer with a detail had gone some five or six miles west of Cheyenne at the beginning of the 80 or 90 foot grade for the purpose of taking observations and for determining in his own mind where the East base of the mountains commenced. I knew from a discussion with him that he had in view, in his own mind, where the commencement of the heavy grades over the mountains began.

Mr. Reed, General Casement and Mr. Rogers, Gen. Myers and others went east to their work as soon as I had determined the location of our terminals at the East base of the Mountains. While we were here, General Augur received a dispatch from General Custer in which he said

✓ C-19
in two fights, two of his companies had whipped the Indians!" Captain Sam Robbins who was with me in Peru, Illinois in '51 and who also served in the Colorado troops under me was in command of one of the companies.

Walt
Cheyenne was about 6100 feet above the Sea and even then, in July, it was uncomfortably cold. Ever since I left the Missouri River I had not suffered any with the heat. In the middle of the day the sun burns, but at night I wore an overcoat and slept under two blankets. Before we left Cheyenne, the people commenced flocking there. They had heard of the location and they came up from Denver in large numbers. I immediately set one party to laying out the town and called on General Augur to protect its limits as the people who came up commenced putting up their shacks on all parts of it. General Augur complied with my wishes and kept them off of the reservations made for the railroad company. I assured the people who were flocking there that our terminals this winter would be at this place, that we would surely reach there with the track. Col. Seymour was working steadily on Evans' line over the Black Hills trying to pick flaws in it.

On July 17, 1867, about twenty families arrived at Cheyenne for the purpose of settling there.

and my constituents thought I should be there
Congress was in session at this time, but I felt it was my duty to be out upon the work, thinking I could do more good than I could in Washington.

In writing on July 20th, ¹⁸⁶⁷ I said:

"We are all quiet today and observing the Sabbath; washing up and getting ready for our trip west tomorrow. Rawlins, Dunn, Duff and Evans are congenial, but Seymour is here for mischief and trouble; only finds fault. I hope to get rid of him at Bridger Pass. He says he is going back with Mr. Blickensderfer, who is a fine gentleman, attends closely to his duties and bothers no one.

General Augur starts East tomorrow and ^{Genl.} J. D. Stevenson, who served under me during the winter of 1863 and had command at Decatur, Alabama, arrived on the 20th with three companies of Infantry to garrison the post. There are so many trains belonging to the railroad, to the freighters and the military that are arriving and leaving every day and with Gen. Rawlins, General Augur and General Stephenson and others around, it looks like old army times, but there are no horrors surrounding it as there were then. General Augur and his staff did everything they could for us in locating the post and he was so much pleased with the country that he said he should bring his family to Ft. Russell the next summer."

When the mail came in, it brought me a letter from Washington dated July 8th, ¹⁸⁶⁷ from Oakes Ames in relation to company matters in the

Departments at Washington as follows:

"Yours of the 26th of June in relation to the putting of Myers in the Q.M. dept. instead of having Moore sent in by the president, is received. I have seen Wilson and he has been to the Secretary of War about it and he says that we cannot prevent Moore, or rather, we cannot get the promotion of Myers.

Banker has been here a long time trying to get those accounts brought here by Durant last March, settled, and has not as yet succeeded. I don't exactly know where the block is, but intend to find out about it this week. This matter of freight is getting to be a very important item with the Government, and we must get Stanton to appoint some one to attend to this matter exclusively to have a bureau expressly for it.

We got the bonds for the second forty miles on Saturday, which will be very useful in their finances. I feel rather uneasy about the Indians difficulties and am afraid that you will be interrupted in your work but hope you will not. I want to see the road go ahead to the mountains, and a piece up, this year, and if you have no Indian troubles, I suppose you will do so.

I see by the papers you have had another overflow of the Missouri River since I was there, and it has washed away the Iowa R. R. bank still more, which will show the difficulty in a low bridge.

Has the Government commissioner found the Rocky Mountain base, and if so, where does it lay?

We are having awful hot weather here and have a pretty full house. Everyone here wants to get away and we hope to do so this week."

On July 9th, 1867, I received the following letter from Col. Seymour on the Black Hills line:

"I completed my explorations, as I came up today, of the country dividing the valley up which the line runs and the tributaries of Crow Creek lying to the northward of it.

The first depression is opposite Station 500, through which a line may be run by a sharp reverse around the interlocking points involving pretty hard work.

The second occurs farther up, opposite stations 580 to 570, and I think will afford a feasible route into the valley up which we explored the other day in company with Gen. Auger and staff. On looking down the valley, I think I saw the White Bluff on the North Side or bank of Crow Creek where we crossed it on that day, but I may be mistaken, as to the point where the valley enters Crow Creek. At all events, I am satisfied that it will be worth examining in case you desire to carry your line east of Crow Creek Valley as far up as the point to which you called my attention when I was out with you the other day.

If you are entirely satisfied with the line that enters the valley some miles below our camp, the valley up which the present line runs is, of course, all you could ask.

My escort of twenty Pawnee Warriors left me rather unceremoniously about six miles east of here, and I have not seen them since. I send a full report of the affairs by this opportunity to Gen. Auger, to which I refer you for particulars.

I leave here at 12 for Dale Creek beyond the summit and will be back here Monday P. M. to remain over night and return to your camp on Tuesday.

I have run some lines about here over which the levels will be taken during my absence, and I would like to meet you and Mr. Evans here on Monday evening to look at them."

I answered Col. Seymour's letter as follows:

"I am in receipt of your letter of July 17th recommending change on the located line over Black Hills. My experience tells me that mere observation on a line could not determine changes you recommend, I therefore prefer that the changes be made on the ground.

Mr. Maxwell's party will be through here within one week, and I place them at your disposal to run such lines as you consider best. A few days' running will determine the question. Or, if you desire,

Insert on Page 641

The whole party had seen Seymour's disposition to criticise everything and his intention to make trouble for me and Genl.

Rawlins and others had spoken to me about it and on July 2, 1867

I wrote Sidney Dillon this letter:

Dear Dillon:-

Trouble never comes singly--have but just gotten Hills work straightened out and now poor Brown, the best and most promising of all and my reliance for work west, is killed, and I must push out to his party. I am suffering everything but death from my rides-- how long I can stand it God only knows--add to this the fact that I have got nothing but grief along with me and you can imagine my humor.

Your mill men will have to go on to branches of Crow Creek and near the summit for timber; they will find plenty there for their mill until next year.

Indians on the plains have been very bad for two weeks; they have been attacking everything and everybody.

Gen. Rawlins has been of great aid to me; I believe he takes more interest in the road than Seymour, who seems not to care a damn whether the Indians get the road or not so long as he can play gentleman and have a big company to foot his bills. He will be my everlasting bitter enemy for I have taken occasion to give him some pretty strong licks at his actions; he cares about as much for our interests as we do for Japan and will sell any or all of us if he can better Seymour. He has some good ideas about engineering but the devil of it is no one knows when to trust him. He intends to come back with Blickensderfer and stay around the Black Hills; will do what he can to change lines and cause delay--and you must all be careful about what you allow him to do--better hear from me on changes before you make any, as he would not hesitate to delay you if it suited his purpose.

I only caution you because I never knew the man before and if you know him, all right. It would not be necessary for me to caution you.

Sick as I am, I believe I shall get through to Salt Lake if Indians do not kill off all my party. It takes the nerve out of them losing so many.

I want two good engineers to replace Brown and Hill--men of experience and ability. The whole thing is now on the shoulders of Evans and myself. Seymour would not take a party if the road had to stop--told me yesterday that he did not think it policy to push parties out during Indian troubles; said there would be plenty of time next year, when the fact is every cut must be worked this winter and the light work all done for forty miles west of here this fall.

I telegraphed you and Ames about Black Hills but got no reply."

I will turn over to Mr. Maxwell such instructions as you deem best to guide him. As soon as I finish my work here, I will accompany you over the line, and we can take with us Mr. Evans who located the line, and Mr. Maxwell, who is to make the changes, and you can explain to him, on the ground, your idea of the matter."

This question of location over the Black Hills became a burning question between Col. Seymour, Mr. Evans, myself and the company, and will be treated later on in one subject. *Insert Dillon Letter. July 2, 1864.*

I named the town Cheyenne after the Cheyenne tribe of Indians. My policy was to make the names along the Union Pacific Railroad to designate their locality or the tribes who occupied the country and as I expected this to be an important point on the Union Pacific Railroad, I selected the name of one of the most important tribes of Indians on the plains.

On July 15, 1867. I wrote Mr. Dillon, who was at the head of the committee in charge of the work as follows in relation to the result of the surveys that were being made on the new line which I had suggested crossing the Laramie Plains to Bitter Creek:

Cheyenne.

"The loss of Hills put me back three weeks. When I got here, I found the line for 30 miles east was not located, so I took the parties and went into it night and day and got it in. The last 30 miles of the fifth hundred is very light, but the 18 miles in the sixth hundred east of there is heavy, and you want to put on that work three hundred men immediately. I say that you now require five hundred additional men if you want to keep out of the way of the track this year, and next put forth all your energy and get the light work going to Laramie River, and in the winter the heavy cuts taken out.

The line I talked to you about, west of Laramie River, is working out all right. Shall throw out the heavy work and grades over Rattlesnake Pass.

The country I put the parties in is meeting my expectations, and if I have my health, I will give you a good short line with nothing over 50 or 60 ft. grades. I am sorry Williams did not connect with me. Seymour does nothing but complain of work done, lines &c. takes his ease and wants to be waited on. I have no faith in his judgment. He does not know enough about the country to give a good opinion. He is first rate to criticize the work of others, but so far as any help to me, he is none. Mr. Williams would have been. I wanted Seymour to accompany Mr. Blickensderfer to Denver and over the mountains by the Cahce la Poudre route and back by Cheyenne Pass, but he said it was none of his business to show him that country. I had to send Van Trump with him; was too busy to go myself. I am out of patience and probably too hard, but it seems to me engineers are hired to work, not to take a grand pleasure trip; and so far as I am concerned they will so understand. I expect he will pitch into me on his return, but I don't care; everybody along notices it and makes him a standing joke.

I shall push west from here this week. Am laying out our town called Cheyenne. Government is putting in a depot, and I have agreed to build to the post above us, about two miles of track. We can use the track for material. They wanted to put the post west of here, but I fastened them here. People are flocking in there to settle. I shall send the company an advertisement which I want them to publish on neat cards and send to all the national banks who are selling our bonds. We must get \$200,000 out of our town and it can

be done by work.

See Mr. Ames and telegraph Snyder to contract for 10,000 cords of wood delivered east of Carmicheal's cut; also for all the wood he can get at Pine Bluffs. We have got to depend upon these two points for our winter supply, and it must be gotten out before winter, as the snow last winter was so deep that we could not get to the timber. We will get no coal less than 30 miles, and I do not put much faith in Denver Branch, unless you are willing to furnish the money.

I want to hear how you are getting along financially. Write me at Fort Bridger and keep me posted.

The work here is ready for opening. I gave all the notes to Hurd and he is staking off the work. Get masons to work on the two bridges in Black Hills. It will be October before you get any decision from Blickensderfer. I think it will be allright."

our camp but had it insured precaution, which it should have done, it would not have been without good results but the peculiar changes and wild nature of our explorers' lives however gradually begets a degree of carelessness which seems almost inexcusable.

Insert here.

On July 17, 1867, I wired Jesse L. Williams, Government Director that I could obtain a line from the summit of the Black Hills to the Laramie Plains with an 80 foot maximum grade and obtain a grade of 90 *ft per mile* from Crow Creek to the summit at a cost not to exceed \$200,000.

I left Cheyenne on the morning of the 21st following the located line all the way up to Granite Creek where the sedimentary and granite rocks come together and from there on keeping the divide to the Evans Pass; about one-half way up this rise, we ran into a large drove of antelope who seemed to be thoroughly frightened at the large body of troops following me and instead of running away from us, they started towards us. I saw our danger and turned to the troops and told everyone there not to shoot at them and the men were so used to obeying orders that no doubt they saved us from being wounded. The antelope ran right among us so that the men could nearly put their hands on them. It was the most thoroughly frightened body of wild game I ever saw and it was the most astonishing sight to the party. I had seen antelope so frightened that they did not know what to do, but I never saw them run into troops, wagons, etc. There must have been one hundred of them. As soon as they had gotten away from us, I let the two hunters, Sol Gee and Jack Adams go out and get two or three of them for our meals.

I passed the summit known then as Evans Pass, now known as Sherman's Pass, where a monument had been erected to Oliver and Oakes Ames, about noon. This summit is 8260 feet high. It is an open country and we reached and crossed it without very much work. We passed on to Dale Creek, the great obstacle on the line, going to the foot of the Laramie Plains, where we camped for the night. Dale Creek is a beautiful stream. The boys were all out fishing for trout and brought a large number in. There was only one way to cross this valley and that was by a high tressle bridge some 1400

feet long and 125 feet high but I had had the country examined for timber and knew that it was within reasonable reach so that everything could be gotten in that country except the stringers. I spent several days looking over this line from the summit down to the Laramie Plains, taking every view possible of it. There was no possible way of overcoming this divide except by taking the heavy work at Dale Creek or else by long tunnels, which it was impossible for us to build on account of the delay it would cause on the work. I therefore made my decision to adopt the Evan's line from the summit into the plains on a 90 foot grade, which would be an easy line to operate because it was free from curvature.

We reached Fort Sanders, a military post ^{built under my direction when in command} about one mile distance from the town of Laramie, which I had ^{located and laid out}. This ^{Fort} had been the head-quarters of the engineers during the winter and they had ^a built fine two-story log buildings. Col. Mizner who ^{J.K.} commanded the post had built fine log barracks with a capacity of one regiment and General John A. Gibbons had his head-quarters here and was in command of the country West. His family were here. This was my first meeting with General Gibbon and I remember what General Grant had written me about him. He was a splendid soldier and in the Civil War commanded the celebrated iron brigade, a division and a corps and he greeted me with great cordiality. I had written him letterstelling freely ~~telling him~~ my plans and instructed all my engineers to consult him on everything so that he was in full accord with us and very friendly. I told him the whole story of our work, our difficulties, our dissensions and everything so that he could have a thorough knowledge, as I knew he was a soldier that would give away no secrets to anyone and asked him to accompany me West to the North Platte where the Government was thinking of locating another military post. General Gibbon accepted this invitation.

While I was here, I received word from ^{Percy J.} Brown's party that on the 23rd of July Brown had been attacked by a band of Indians in what was known as the Red Desert and after fighting all the afternoon, Brown had been wounded in the abdomen, had been taken to the stage station where he died. This put another party out of commission.

of Dept. of Missouri

Mr. Percy T. Brown was one of the brightest of our young engineers. I had given him a division extending from the North Platte to the Green River. When Brown joined the party, after the death of Stephen Clark, he started west for the divide of the continent. He found it an open plain extending some 150 miles N. E. and S. W. and 70 miles E. and W. The Rocky Mountains had from an elevation of 1300 feet dropped down ^{to} 6000 feet into an open plain and he found the divide of the continent to really be a great basin some 500 feet lower than the general level of the country. In reconnoitering this country, Brown expected to find a stream leading from his first summit to the waters of the Pacific, dropping into this basin and in exploring it near its southern rim, he struck 300 Sioux Indians who were on the war path. He had with him eight men of his escort and he immediately took possession of an elevation in the basin and there from 12 o'clock until nearly dark, fought off these Indians. Just before dark a shot from one of the Indians hit Brown in the abdomen. He begged the men to leave him and save themselves but the soldiers refused to do so. They had to give up their horses and as soon as the Indians obtained these, they fled. The eight soldiers made a litter of their carbines, and they packed Brown thirteen miles South through the tall sage brush to La Clede Stage Station, thinking they could save him, but he died soon after reaching the station.

I had received no reply to my dispatch to the company on the line over the Black Hills so I telegraphed to Sidney Dillon on the 24th of July, 1867, saying:

Fort Sanders.

"I want answer to my dispatch to company about change of line and grade over Black Hills. I must push West. The Indians hold the country from here to Green River and unless I get out there, we will fail in all our plans for 1868. Brown, chief of party west of here killed yesterday after fighting and losing his stock."

Upon Mr. Dillon's receiving this dispatch, Mr. Ames sent me the following dispatch:

North Easton.

"We received your telegram saying you could make an 80 feet grade at \$200,000 extra cost, and telegraphed you that the grade of the charter (116) feet would answer. We did not have sufficient data to be able to decide the question.

The great desire of the country is a rapid completion of this road and we do not wish to delay the work by any very heavy cuts, when we can do this work after the road gets in operation. When we are running the road we can reduce grades but to get it running we will make the grades in all places, if it will more rapidly complete the work, at the maximum grades allowed by the charter.

Durant and his friends are endeavoring to injure you and our standing before the country by calling us slow. I don't wish to be

be liable to that charge by attempting to reduce grades to delay the work. Let everything be pushed ahead as fast as possible."

The Company did not seem to appreciate the great advantage in reducing our grades from 116 to 90 feet.

I also received a letter here from Mr. Banker who was in Washington looking after the railroads accounts for the Government. He says:

Washington, D. C.

"I am pretty much all my time down here looking after our Government accounts. Col. Bliss has been relieved and Col. Crilly is in his place and a much more efficient officer he makes I assure you. Gen. Megis absent on leave and Gen. Rucker in charge. Succeeded in closing up that lot of accounts you left them some time ago just ten days ago, and now have to stay here almost all the time to put things ahead."

We were very persistent in getting payment from the Government on our work so as to help out in the operating expenses of the road being run by the company. While at Sanders, I learned of a band of Sioux out on the plains and through General Rawlins I got permission to send my escort out to try to catch them and whip them. They made a long scout but struck no Indians.

*Ft. Sanders,
July 22, 1867.*

In writing home I spoke of the death of Brown; so young, so able, to fall right as he had whipped the devils, and the only one of our men hurt in the fight. It was a great loss to me and I see no way to replace him. I begin to think that engineering, with the load I am carrying, is no sinecure, but if I should stop now, a lick would not be struck west of here this year. All say give it up, but I say no - and get ^{additional} troops for my parties. They are now working with 70 men as escort.

The other day I climbed the highest peak at the head of the Lone Tree Creek in the Black Hills to get a view of the surrounding country and from it I could see Laramie Peak 100 miles north; Pine Bluffs 60 miles east; ~~Long's~~ Peak 150 miles south and the Medicine Bow 100 miles west, with one half of the southern circle fringed with the ragged, snow capped, Rocky Range, while the country east looked like a great sea. From the top I picked several flowers. No matter how sterile or ragged this country it is dotted all over with roses, leaves and grasses with singular stones and valuable mines. For three days the wind has blown a perfect hurricane and the sand and dust has filled every corner.

Since we came here the ladies of the post have given nightly parties. They get up rides which the young men no doubt enjoy. I attended the one at Capt. Wards and Gen. Gibbons but the others did not attend. They were very pleased with General Rawlins and showed him every attention.

My health is only fair, do not improve as much as expected; I have too much on my mind. I hope after I reach Green River, where I can get vegetables and fruit plenty that I shall do better.

Gen. Rawlins improves wonderfully. I like him very much. Mr. Duff, Mr. Blickensderfer, Major Dunn and Mr. Corwith are all fine gentlemen and take more interest in our road than many who are paid for taking it."

When the mail arrived at Ft. Sanders, I received the following letter from Mr. Oliver Ames telling me of their difficulties and what they expected of me:

*New York,
July 28, 1867.*

"Your letters are received. In the present condition of our

matters, I do not wish to undertake any work that will delay construction, and wherever we can hasten the work by grades being made 116 ft. and curves of one or two degrees, I should make them even if we had to reduce them after we get in operation.

The Dr. is infusing the minds of Government directors with the idea that we are not pressing forward the work as rapidly as we should, and that if it was let out to contractors and he had the management of it, we could get 150 miles into the mountains this season. I do not wish the Dr. to make any capital out of this, and the feeling of our committee is to push the road along with the greatest rapidity even if we have to put the largest grades and curves that our charter allows.

You know very well what our feelings are about the road- to make it as perfect as possible consistent with the rapidity of construction demanded by the country. We cannot, of course, in the office say what is best about the line. If in your judgment and Col. Carter's the change of high bridge was necessary, our confidence in your looking out for the best interest of the road leads us to unhesitatingly approve your work. It is of the greatest importance to have this Mountain line located early and have men put on all heavy work at once. A year in one of these deep cuts is soon wasted and we ought to have the men working 150 and 200 miles ahead of tracklayers.

Your favor in regard to Seymour, Blickensderfer and others is at hand and approved."

Mr. Reed, General Augur and others who left me at Cheyenne, took the train at Julesburg. Mr. Reed in writing of it said:

"Julesburg continues to grow with magic rapidity, vice and crime stalk unblushingly in the midday sun.

General Auger and staff returned here last Friday evening and nothing would do but they must see the town by gas light. I sent for Dan Casement to pilot us (I knew he could show us the sights). The first place that we visited was a dance house, where a fresh importation of strumpets had been received. The hall was crowded with bad men and lewd women. Such profanity, vulgarity and indecency as was heard and seen there would disgust a more hardened person than I.

The next place visited was a gambling hell where all games of chance were being played. Men excited with drink and dally were recklessly staking their last dollar on the turn of a card or the throw of a dice. Women were cajoling and coaxing the tipsy men to stake their money on various games; the pockets were shrewdly picked by the fallen women of the more sober of the crowd. We soon tired of this place and started forth for new dens of vice and crime and visited several similar to those already described. At last, about ten P. M. we visited the theater and were asked behind the curtains to see the girls. From here I left the party and retired to my tent fully satisfied with my first visit to such places."

Julesburg was a much harder place than North Platte. I had laid out the town there and put my agent in charge, when the gamblers got together and held a meeting and determined to jump the town and not pay for the lots, claiming that I had no right to them and that the right of possession was far superior to any right I had. My agent there wired me their action. I immediately wired back to General J. S. Casement telling him to take such of his force as was necessary and go back to Julesburg and clean the town out and hold it until the citizens there were willing to obey the orders of the officers I had placed in charge and pay for their lots. This was fun for Casement. I did not hear anything more in relation to what he had done there.

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until I returned from my trip. When I saw General Casement I asked him and he said when we get to Julesburg, I will show you. After we landed there, he took me up on a hill where there was quite a burial ground, and he said, "General, they all died in their boots and Julesburg has been quiet since."

I am told that he went back with about two hundred of his force, armed, and first called a parley with the leaders there who defied him, when he opened up on them, not caring whom he hit, took the town and they plead for quarters, which he gave them, and they returned and complied with the orders, paid up for their lots and learned a lesson which lasted for some time.

I left Ft. Sanders with my party and with an escort of about 300 to distribute along the line to the different engineering corps who needed them. I followed the line which Brown's party had run from Ft. Sanders, crossing the Little and Big Laramies to Cooper's Lake and struck almost due West from Cooper's Lake to Rock Creek. This was a very interesting country. The Laramie Plains were bounded on the south by the main rocky mountains, ending in the Medicine Bow Mountains, the whole range covered with snow. It was mountain piled on mountain with immense canons with a landscape broken by perpendicular walls. As I travelled over it, I often thought what scenery there would be from the car-window.

When I struck the Rattlesnake Range, I found what we called Brown's Pass; we climbed on a 60 foot grade with light work, striking the head of what we called Mary's Creek, named by Mr. Blickensderfer ^{for his daughter}, and followed down that stream to the North Platte. About half way down, there were three prominent peaks of the West Rattlesnake Range, right where Mary's Creek canoned through, and I named them Lettie, Ella and Little Annie after my three children. The Central Peak is the highest. I had Van Lennpe take a sketch of them, with a party of the party on the highest, which I should judge was 5700 feet above the sea.

The North Platte, which heads in the North Park and ^{runs north} to the mouth of the Sweetwater, then turns suddenly east, was crossed some 50 or 60 miles from its head and some 75 miles from the mouth of the Sweetwater, where it turns south. It was a bold mountain stream some 500 feet wide skirted with small groves of cottonwood.

Clear, cold snow water flowed through it and after travelling two days without water, the whole earth impregnated with alkali from one to two feet thick, it was a great pleasure to strike a stream like this.

We found coal near the top of the Rattlesnake Pass, at a place which I called Carbon and sent orders to Reed that as soon as his grading force reached there to have it opened. This was the first coal mine on the line of the road to supply the road with coal. Coal abounds, I think, all along the line ^{west of that Point} and it will furnish us plenty of fuel.

^{of the Medicine Bow Range}
Elk Mountain, which is snow clad, is a great land mark.

At its foot is Fort Halleck, now abandoned and not far away from Rattlesnake Hills Pass. I was not fully satisfied with this line and left orders to have Maxwell or whichever party was relieved first on the Black Hills to run another line to the north and also a line down the Medicine Bow to the North Platte. I located the line across the North Platte here. The river was high from the melting snows in the mountains and we undertook to build a raft and take our things over and would swim the cavalry. They were poor hands at that work, but I had with me my horse Rocky Mountains who was an excellent swimmer and I lead the way across the stream. More than half the cavalry landed on the same side they started in and two or three came near drowning but when they saw how I handled my horses going over, they had pride and their officers got them started in and by the time we had everything across, the Cavalry had learned how to swim a horse across a stream.

At this crossing, General Gibbon established Ft. Steele. This was a noted place for the Indians. They concentrated here in the summer and even in the winter and during my command on the plains, they were very troublesome and the trails north and south leading from the Sweetwater, going south into the North Park and into the Middle Park, all passed through here and it was from this fact that Gen. Gibbons located his post here. This country had not been developed at all until I put my engineers in it. The lines had all followed the stage road by Ft. Halleck and Bridger Pass, which we were forty or fifty miles north of, in an open undulating plain; no streams except those rising in the granite having water; all those rising in a sedimentary formation ^{or Plain} were dry.

From here I pushed west as rapidly as possible to reach Appleton's party. The day's march was up a dry broad canon without grass or

shrubbery of any kind, a perfectly barren country. It was nearly night when we had made about eighteen miles without any water and I wished to camp here to examine the country. I sent all the parties out to find water. Rawlins and I went out together over the land to the south of where the line was and we struck a fine spring coming out of the solid rock. When we reached it, Rawlins sat down by it and took a drink and he said he thought it was the most gracious thing he had found in his life and I said to him, "General, we will call this spring Rawlins Spring," and it has borne that name ever since. The town is called Rawlins and is a division point on the Union Pacific Railroad.

Sol Gee, who pretended to know something of this country, somewhere ahead of us, had struck a sulphur spring, which he and his horses got into and when they got back to camp, they were covered with the yellow sulphur and were a hard looking set. I pitched our camp at Rawlins Spring. The water has cut away through the ridge making an easy passage for the railroad line and through here Brown had run his preliminary line. Up to this time, he certainly had found a remarkable line from the Laramie River West.

At or near this spring, there is an Indian trail running from the Yampa river across the divide, north through the Seminoe mountains to the Sweetwater; a trail, which, from its looks, is used very extensively by the Indians.

On August 5, 1867, I moved some 14 miles west to a dry branch where I found Brown's party with Mr. Appleton, the Assistant Engineer in charge of it, thoroughly demoralized from the loss of their chief. Most of the escort had gone to the stage station and were waiting for me to arrive. I reorganized this party and put it under Mr. Appleton and left with them enough of my escort to protect them. As they had no knowledge of the country ahead of them on the latitude they were in, I proposed to take Appleton with me so as to see it and to explore it as we went forward.

Col. Seymour and Mr. Blickensderfer who had accompanied me, made up their minds to leave me there. I could see that both of them were very much disgusted with the country they had come through and thought I ought to get farther north-but I knew a good

deal more about this country than they did, But I listened to what they had to say. Col. Seymour, on leaving, wrote me the following letter which showed how much confidence he had in the country:

North Platte River, Aug. 4, 1867.

"Having somewhat hastily expressed my views to you this morning in relation to the objectionable features of the route between Fort Sanders and this place over which we have just passed, as well as the means by which I thought they might be avoided, I embrace a few moments leisure to state a little more explicitly and in writing the reasons why I have asked you to extend your surveys considerably to the northward of any route heretofore examined. My objection to the present route are briefly these:

1st. Although considerably cheaper than the route surveyed by Mr. Evans through the Rattlesnake Pass, yet it is very expensive.

2d. Although Brown's Pass is several hundred feet lower than Rattlesnake Pass, yet the undulations of grade over the divides between streams flowing into the Laramie and Medicine Bow Rivers makes a large aggregate of rise and fall, with, in several cases, heavy maximum grades, which should be avoided if possible.

3d/ The great scarcity if not absolute absence of running water over some portions of the route during the greatest portions of the year will cause serious inconvenience and considerable additional expense in building the road, and, I very much fear, render it comparatively useless for business purposes when completed.

There is no permanent living water on the route between the Medicine Bow and North Platte Rivers, a distance of nearly fifty miles, and I judge from the formation of the country that an adequate supply for operating the road cannot be obtained by the ordinary process of sinking wells, if at all.

A road with the traffic we claim must pass over the Union Pacific Railroad, and, with such grades as necessarily intervene over this portion of the route, should have ample supply of water at intervals of not less than ten miles in order to operate it with safety and success. During the melting of the snow, say from 1st of April to 1st of July, water tanks may be adequately supplied from the surface drainage, but during the balance or three-fourths of the year I do not believe that a sufficient supply can be obtained to keep the trains moving upon the road. This, to my mind, is, therefore, the most fatal objection of the three named.

I believe as a general rule that the road shall follow as near as may be the principal water courses of the country through which it passes, particularly when they lead in the general direction of the route which it is proposed to traverse—although this theory of location would in many cases increase the distance materially, yet the saving per mile in first cost in rise and fall of heavy grades, in facilities for abundant supplies of water, in avoiding a succession of cuts where snow would obstruct the trains, in generally developing a better country and the greatly diminished cost as well as additional certainty of operating the road successfully, in my opinion, very far counterbalance any objection that may be urged to the elongation of the line within reasonable limits.

It was upon this general principle that I recommended a change of location immediately west of Omaha, and for the same reason I have always urged a careful survey of routes up the North Platte and through the Laramie Canon. It is now settled that the road is to come over the Black Hills Range of the Rocky Mountains at Evans Pass, and therefore I feel it to be my duty as consulting engineer to urge the adoption of the proper principles in the location of the line from that point westward.

My knowledge of the topography of the country is, of course too limited at the present time to enable me to state with much particularity the precise points of details of the location which I would recommend, but generally I would follow down the westerly slope of the Black Hills, with the least practicable grade to the Laramie Plains, and thence along the north-easterly side of the river until by crossing it I would avoid all the streams that flow into it from the south and west, as well as the

divides between them, and at the same time enable me to cross the Rattlesnake Hills either through the pass made by the Medicine Bow River or some more favorable depression north of it and thus reach the valley of the North Platte at same point near the mouth of the Sweet water which flows into it from the region of the South Pass. If the valley of the Sweet Water is well supplied with water and also practicable for a road, and if the country south of it is barren of water, I would follow up this valley to the most eligible point for crossing the divide of the Continent.

I have become so thoroughly impressed with the importance of this general route and its great advantages as compared with the routes already surveyed that I must ask you to have it carefully surveyed and reported upon in connection with other routes to which you may submit to the Board of Directors."

I notice in my diary on August 5th, 1867, a statement in relation to a conversation I had with Mr. Blickensderfer and Col. Seymour on the line. Col. Seymour said he did not consider a railroad could be built and run over the route we had travelled, but that we must work into the North Fork of the Platte and run up the Sweet Water. ^{to the South Pass} He also stated this to General Rawlins privately denouncing the whole route as wrong and that a railroad would never be built over it. ^{His route would go directly North 50 miles and pass an equal distance to reach Salt Lake adding about 400 miles to the distance which the government would never approve.} As the railroad is running today over the identical line that we went over, his prophesy did not come true.

When Col. Seymour and Mr. Blickensderfer returned, they took with them a guide and struck to the north, trying to get East, somewhere between the position they were in and the Seminoe Mountains, but I knew exactly what that country was as my troops had been all over it when I commanded this department and I had reports of it.

When they got East, Col. Seymour wrote me the following letter from Ft. Sanders:

Ft Sanders.

"We arrived here on Saturday and found no serious difficulty in passing through the country which had never before been crossed with wagons.

My observations satisfied me that there is a route still north of Brown's line that is worth at least a careful examination. I do not think there is a good route north of the Medicine Bow through the Rattlesnake Hills, and think perhaps that the Medicine Bow valley itself may be too expensive, although its grades must be far superior to any other. You will find a route, however, between the Medicine Bow canon and Brown's line which to me looks very favorable, and the summit of the Rattlesnake Hills seem lower than Brown's Pass.

If the valley in which we camped on our return trip, after leaving the divide between the Platte and Medicine Bow valleys runs down to the Platte so as to strike a wide, open plain or valley leading from the Platte towards the Sweetwater Mountains or Semino Gap (in which we also camped) I shall think it a very favorable route, for the reason that I can see no serious difficulties between that point and this place if the line is carried

north of Coopers Lake and possibly around the north bend of Rock Creek above its mouth. And I understand there is no difficulty in going westward from Serino Gap to the southward of Sweetwater Mountains.

I would not hesitate to make all the nothing necessary to secure a cheap line and low grades, also plenty of water, even at the sacrifice of several miles in distance, as I take it for granted that our company wish to build a road not only as cheaply as possible but one that can be operated as successfully and economically as the country will admit of.

I trust that on your return trip you will explore this country through which we have just passed, and I have no doubt that you will arrive at the same conclusions that I have."

He had discovered that the route they took East was not a practicable one for a railroad. The fact is, as the guide told me afterwards, they got tangled up in the canons of the Medicine Bow and North Platte and lost their way but they did not tell me that in their letters. *In this letter he abandons the Sweetwater and South Pass Route.*

Blickensderfer
Mr. *A*, who was a very careful man and whom I knew had been influenced a great deal in his opinion of the country he had come over by Seymour, was a very fair and truthful man and when he reached Ft. Sanders, he wrote me the following letter giving his views of the country:

*Ft Sanders,
Aug. 15-1867*

"We arrived here again on Saturday afternoon from the West, after a trip marked by no unusual occurrences, and without encountering any difficulty in passing through the country. Our first day's march from Camp Separation was down the valley to the spring we found on descending from Mount Ralwins. The next day we moved northward on the Plains road about 7 or 8 miles and then diverged eastward over a plain across two ridges into a wide, smooth valley running southeastwardly, apparently to the Platte. In this valley are numerous lakes, mostly of good water, but some impregnated with alkali.

We encamped just east of the Gap at an excellent spring with plenty of grass and remained there over Sunday not knowing how far East of us the river was. On Monday we marched over an easy country inclining toward the river and struck the stream at 8 or 9 miles at the mouth of Medicine Bow, found a good ford about two miles above the mouth of Medicine Bow, passed over and moved along the valley to near the mouth of Medicine Bow and encamped, spending the balance of the day in exploring. On Tuesday I directed the trains to follow the divide between Platte and Medicine Bow, while I took one company and rode over Medicine Bow northward about five miles to examine the country. Found north of Medicine Bow broken and rough and ascertained the Platte did not deflect to eastward as Jannis supposed, but flows almost due north from mouth Medicine Bow into the canon by which it passes Black Hills, and that Kelloggs Creek which rises on south side of Black Hills flows south-westwardly, not into the Platte but into Medicine Bow about two miles above where the latter enters the Platte. Passing back again crossing Medicine Bow some 8 or 9 miles above its mouth, we made the trail on the divide and found the train far ahead of us having an excellent road. We overtook the train a little before sundown, they having descended into the valley of a small stream (dry) running westward into the Platte where they found an excellent spring and some grass. Our march this day is estimated at 25 or 26 miles but without water. The latitude of this camp is 41° 52' not more than three or four miles north of Brown's Pass.

Wednesday we started due east of the valley over the summit

and down a ravine towards Medicine Bow which ended in two lakes of good water. Between this summit and these lakes we found wagon trails and a stake showing that your engineers had been there. We continued on nearly due east over an easy country, having a valley on our left which can be followed to Medicine Bow. After getting well away from the hills, we bore off to our right rather more than I designed and struck our westward trail about 5 or 6 miles from our old camp on Medicine Bow. This we followed for some time and then bore off to the left and encamped on Medicine Bow a few miles below our camp when going west. The next day we bore off more to the northward and made Rock Creek over a good road with several lakes of fresh water. Friday we marched from Rock Creek north of Coopers Lake over an excellent country to Laramie about one mile below Junction of Little Laramie, and Saturday arrived here, as stated before.

The entire trip was very satisfactory to me and has given me, I think, a good view of the country within the limits of which you will locate your road. My impressions are, first, that you will not find a good route north of Medicine Bow and probably not by following that stream to its mouth, although I think the latter worth examining. Second, that you will find a good route by passing north of Coopers Lake, following in or near the valley of Rock Creek to its mouth, down Medicine Bow 6 or 8 miles, and then up the valley we descended from the summit passing the lakes before described, crossing Rattlesnake Hills 3 or 4 miles north of Brown's Pass, down the valley on which we encamped (*Mary's* Creek) to the Platte and thence westward by the wide valley and lakes we passed on our second day's march to the divide of the continent.

The most difficult part of this line will be in getting from Medicine Bow to summit of Rattlesnake Hills, but I think careful examination will result favorably. By this line, I think you will reach the North Platte without encountering southerly branch of Rattlesnake Hills and thus probably avoid canons and heavy work, and I think the summit of the northerly branch of these hills will not have an elevation exceeding 7000 ft. and probably less, some 100 to 150 ft. lower than Brown's Pass.

I have thus, as you desired when we parted, given you a pretty full account of the country through which we passed. If you will permit, I suggest that you should have surveys made to fully develop the country as far north as Medicine Bow Valley and especially along the route last indicated above, through the divide of the continent. This line will be a little longer than your present one, but I think will be so much more easily worked when completed, as to be commercially much more valuable. I wish, for the sake of your professional reputation that you should know you have occupied the best ground the country affords.

The mouth of Medicine Bow is in latitude $42^{\circ} 3'$; mouth Rock Creek about $41^{\circ} 54'$. I will send you all my determinations of latitude and longitude when worked out at home.

North and south of Medicine Bow there is an abundance of coal. I found a good vein just before we descended from the divide into the valley of *Mary's* Creek west of summit on Friday evening, which was 7 feet thick of good bituminous coal, of which I have specimens.

We start eastward tomorrow morning and I expect to finish up and reach Omaha by the 31st. I find that Lambert is at Cheyenne without a party, and Maxwell is here with a party but without an escort. He has agreed to accompany me to make surveys between Evans Pass and Cheyenne. We saw some Buffalo, plenty of elk and any quantity of antelope. My health is good and the command apparently in good spirits."

Mr. Blicksderfer, while a very able engineer in details, was not as able on reconnoissances as some that we had had but still I paid a good deal of attention to his judgment and examined every part of country suggested by him, which, as the story goes on will appear.

C/B

On leaving Separation Creek to start West to explore the country, I gave instructions to Appleton's party to run a line from where they were, back to the North Platte, striking the mouth of the Medicine Bow to see what kind of a line could be obtained and to strike the North Platte at a Creek which came from the Rattlesnake Hills into the Platte about one-half way from our crossing at Ft. Steele and the mouth of the Medicine Bow. I took Appleton with me with a small escort for us and went forward up an easy grade to the first divide of the continent., some twenty miles, which I was certain could be made with a 60 foot grade and with very little work. When we arrived here, we camped just below the summit and the next morning I went out with my orderlies and with General Rawlins and Appleton to examine the country north and south of us. When we reached the summit, we saw it dropping down very rapidly into a deep basin. We supposed that it led to the waters of the Green River and that we would soon strike a stream leading into Bitter Creek and thus connect with Evans' survey of 1866. As we stood there looking at the basin, examining it thoroughly with our glasses and taking the courses, I thought I discovered a band of Indians some ten or fifteen miles out in the basin, but after watching them for quite a time, I saw they had teams with them and that they were white men. I could not think of any party who could be in there unless it was Bates' running his line from the Green River East to meet Brown. We soon joined this party and found that it was Bates' party. The men were in a terrible condition. They had been without water and their tongues were swollen. They had left most of their transportation and were running a due East line through the basin for the purpose of reaching water. We supplied them with water and other necessities and sent Bates back to take up his line where he had left it and push it on to the mouth of the Medicine Bow, keeping to the North of Brown's line and testing the country, and then running up the Medicine Bow to a connection with Brown's line. After getting into this basin, I became satisfied that we had not reached the exact summit of the continent and

kept to the south end of the basin from where we struck it some twenty miles. I found that we had dropped down about 500 feet. In about twenty miles, we raised another summit and here found that we were at the heads of the branches of the Bitter Creek which lead us into Green River. The divide of the continent which we were crossing, had two summits; one at the east side of the Red Basin and the other at the west side and this basin extended in a North-west direction nearly to the South pass.

Where I stood on the summit, I could see to the south-east of me the Medicine Bow and to the Northwest the Wind River range and these ^{two} summits were only about six thousand feet high while the elevation ~~to~~ from Bridger Pass or South Pass was much higher.

These two mountain ranges were both from ten to twelve thousand feet high. This open plain is bounded on the East by the North Platte, on the North by the Sweet-water and Wind River mountains and on the West by the Green River and on the south by Bitter Creek ^{Range}. There was no vegetation in this basin and no water; all the streams seemed to run from the rim of the basin to near its centre, where the sandy formation was red, which made us give it the name of the Red Basin.

Bridger
Q-13
Since Bates crossed, the western rim of the basin, he had been without any water whatever. It is about 150 miles from the Medicine Bow Mountains to the Wind River range on the Northwest. The only trail that seemed to be through here was what was known as the Cherokee trail where Col. Steptoe undertook to cross on his first trip to Oregon. We found on this trail remains of wagons, anvils, black-smith tools and other things that had to be abandoned by Steptoe. Bridger informed me that Steptoe undertook to cross this country to strike the South Pass but was forced to go back down what was known as Bitter Creek and then up Green River. Nature had opened up a very remarkable formation for a railroad and I saw as soon as I had crossed the head of Bitter Creek that somewhere through this basin our line must be laid to obtain a low grade over the divide of the continent and very light work, and I immediately sent Appleton back to take his party and find a line that was not as rough as the one I came over farther south in the basin and strike the Middle Fork of

Bitter Creek at Rock Springs, where we found a stage station.

I received notice here of the death of the wife of Mr. James A. Evans and that he had to leave his work and go East but he left his principal Assistant in charge of the party, thus avoiding any delays in the work. I soon after received the following letter from him:

So far as outward appearances are concerned for the present my great agony is over. Through the great kindness of my friends here I was permitted to follow the remains of my beloved wife to the grave yesterday. She died on Saturday while I was at Denver on my way. The weather being very warm, it was only by great exertions that the sad event could be postponed till I arrived on the evening of the 6th- through the kindness of being furnished with a special train.

My dear sir, I am in great affliction, and I much fear that God's visitations are not yet ended. The shock to my oldest boy, a very sensitive, nervous subject, makes me tremble for his safety. He is very low and I cannot leave him. What my course may be hereafter, I know not. I feel that at present my duty is at the side of my sick child. I know how badly I am wanted at Fort Sanders and west of there, but the ways of Providence are not our ways and at present I cannot go. At Denver, in much agony of mind, I wrote you as much with regard to this matter, as I was anxious you should make some provisions for what I considered a very probable emergency, and the last thing that I would require would be that business and friends should suffer on account of my troubles.

O'Neill will, I presume, take up the profiles and maps from Laramie over west and do the best he can with them. I have so written him. He is quite reluctant to proceed without my help, chiefly for the reason of friendship to me, but I have talked to him about the matter, and if you can so manage matters as to give color to the idea that I have not been ill treated, he will remain and make a useful servant. I desire for his sake that this impression should prevail and that he should be with you. Mr. Maxwell I am sorry to say I am not so confident will take up what you want should be done for the want of proper instructions, seeing that he is unacquainted with the country, and unless you have received telegrams of mine sent to North Platte, I so fear that he will be delayed in knowing what to do. As you were going over the line, I thought it was best that you should furnish him with instructions as if I attempted to do it without going with him over the ground I might be wrong. I shall telegraph and write to both of them today or tomorrow.

After you left me at Sanders I commenced platting the original location. I thought this was necessary as it would enable us to put on the changes and show the whole matter. I have the maps here with so far as completed and have arranged it so that the changes will reach here speedily.

Before going west, Mr. Dillon requested me to write him about matters in the Black Hills, and I do so today, enclosing you with this a copy of my letter, for the reason as you are my superior it is right that you should know all that I say about business matters. I regret that you are not here to see it before it is sent as you might wish to modify it.

And now, sir, I wish to say this. Let no consideration of friendship for me lead you in any way to compromise yourself; do and act in every respect as you think the case demands, looking solely to business only. I fear much that there is a disposition to injure you if possible. How sad it is that people for private ends will forget that glorious golden rule.

Please give my kind regards to Gen. Rawlins and the rest of the party, and be assured that whatever may happen, I shall always continue to be your sincere friend."

We followed down Evans' line to Bitter Creek to Green River and crossed at the ferry, where Mr. Hodges, Assistant Engineer of the Salt Lake Party met me and accompanied me over the line to Salt Lake. We followed Reed's line crossing the divide ^{which is located on this range} up Black's Fork to Ft. Bridger. On our arrival here, I received the following letter from Mr. Oliver Ames in regard to his troubles with Mr. Durant and also the letting of the road 667 miles beyond the 100th meridian:

North Easton, Aug. 15, 1867.

"Your favor dated North Fork Platte, Aug. 4th is received. We had been without advice from you since July 27th from Fort Sanders and begun to feel anxious about you. We are now very glad to hear that you are all right. Your letter from Fort Sanders said the Indians held the country west of you and we naturally felt anxious for your safety.

We have been a little stirred up here about our matters and from the cause of Durant, who can never be relied upon. We have felt a little anxious that things should run smoothly until the annual election, the 2nd of October, when we calculated to put enough reliable men in the Board of Directors to have things in the future run on correctly. We had a special meeting last week and gave out a contract to my brother, Mr. Oakes Ames, to construct the road 667 miles beyond the 100th meridian; this takes the road on 914 miles beyond Omaha and according to your last report within 110 miles of Salt Lake. This contract has no provision to favor Durant or any other individual and will be managed very much as the road construction is now being managed, only we hope to every year have additional economies carried into the construction and by better line and better management make the road a paying institution.

We want, now that we are in the mountains where the best engineering talent is required, to have an abundance of the best men to aid you in finding the best lines that can be procured, and then the best men to see that the construction is properly done and honestly measured.

I have not heard anything from Seymour since I received your letter of July 27th. I suppose he is looking over the line at his leisure, and if he can make improvements enough on it to help pay his salary it will be the first useful thing he has done since my connection with the road."

At Fort Bridger there was a small military garrison. Fort Bridger is located in latitude 41 degrees, 18 minutes 12 seconds and longitude 110 degrees 18 minutes 38 seconds, is 1,070 miles west of the Missouri River by wagon road, and 886 miles by railroad. Bridger selected this spot on account of its being on the overland emigrant and Mormon trail, whether by the North or South Platte routes, as both come together at or near Bridger.

The land on which Fort Bridger is located was obtained by Bridger from the Mexican Government before any of the country was ceded by Mexico to the United States. He lived there in undisputed possession until he leased the property in 1857 to the United

States by formal written lease signed by Gen. Albert Sidney Johnston's quartermaster. The rental value was \$600 per year, which was never paid by the Government. After thirty years, the Government finally paid Bridger \$6,000 for the improvements on the land, but nothing for the land. A bill is now pending in Congress to pay his estate for the value of the land. The improvements were worth a great deal more money, but after the

Government took possession it seemed to have virtually ignored the rights of Bridger, building a Military Post known as Fort Bridger on the leased ground.

Bridger's fort occupied a space of perhaps two acres surrounded by a stockade. Timbers were set in the ground and elevated eight or ten feet above the surface. Inside this stockade Bridger had his residence on one side, and his trading post in the corner directly across from it. It had swinging gates in the centre of the front, through which teams and cattle could be driven safely from the Indians and renegade white thieves. He owned a large number of cattle, horses and mules, and his place was so situated that he enjoyed a large trade with the Mormons, gold *seeking California and emigrants to Pacific Coast.* hunters, mountaineers and Indians.

In a letter Bridger wrote to Pierre Chotau, of St. Louis, on December 10, 1843, he says: "I have established a small fort, with blacksmith shop and a supply of iron, in the road of the immigrants on Black Fork *of* Green River, which promises fairly. In coming out here they are generally well supplied with money, but by the time they get here they are in need of all kinds of supplies, horses, provisions, smith-work etc. They bring ready cash from the States, and should I receive the goods ordered will have considerable business in that way with them, and establish trade with the Indians in the neighborhood, who have a good number of beaver among them. The fort is a beautiful location on the Black Fork of Green River, receiving fine, fresh water from the snow on the Uintah range. The streams are alive with mountain trout. It passes the fort in several channels, each lined with tress, kept alive by the moisture of the soil."

It was a veritable oasis in the desert, and its selection showed good judgment on the part of the founder.

In 1856, Bridger had trouble with the Mormons. They threatened him with death and the confiscation of all his property at Fort Bridger, and he was robbed of all his stock, merchandise, and, in fact, of everything he possessed, which he claimed was worth \$100,000. The buildings at the fort were destroyed by fire,

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and Bridger barely escaped with his life. This brought on what was known as the Utah Expedition, under Gen. Albert Sidney Johnston. Bridger piloted the army out there, taking it through by what is known as the Southern Route, which he had discovered, which runs by the South Platte, up the Lodge Pole, over Cheyenne Pass, by old Fort Halleck, and across the continental divide at Bridger's Pass at the head of the Muddy, follows down Bitter Creek to Green River crosses that river, and then up Black Fork to Fort Bridger.

As the troops had made no arrangements for winter, and shelter for the stock was not to be found in the vicinity of Salt Lake, Bridger tendered to them the use of Fort Bridger and the adjoining property, which offer was accepted by Johnston, who wintered his army there. It was at this time that the Government purchased from Bridger his Mexican Grant of Fort Bridger, but, as heretofore mentioned, never paid him for the property, merely agreeing to pay the rental, and ^{the Government afterwards} claiming that Bridger's title was not perfect. This was a great injustice to Bridger. His title was one of possession. He had established here a trading post that had been of great benefit to the Government and the overland immigration, and he was entitled to all he claimed. The Fort was the rendezvous of all the trade and travel, of the Indians trappers and voyagers of all that section of the country.

Concerning his claim against the Government, under date of October 27, 1873, Bridger wrote to General B. F. Butler, U. S. Senator as follows:

"You are probably aware that I am one of the earliest and oldest explorers and trappers of the Great West now alive. Many years prior to the Mexican War, the time Fort Bridger and adjoining territories became the property of the United States, and for ten years thereafter (1857) I was in peaceful possession of my trading post, Fort Bridger, occupied it as such, and resided thereat, a fact well known to the Government, as well as the public in general.

Shortly before the so-called Utah Expedition, and before the Government troops under General A. S. Johnston arrived near Salt Lake City, I was robbed and threatened with death by the Mormons, by the direction of Brigham Young, of all my merchandise stock--in fact everything I possessed amounting to more than \$100,000 worth--the buildings in the fort practically destroyed by fire, and I barely escaped with my life.

I was with and piloted the army under said General Johnston out there, and since the approach of winter no convenient shelter for the troops and stock could be found in the vicinity of Salt Lake, I tendered to them my so-called fort (Fort Bridger), with the adjoining shelter, affording rally for winter quarters. My

offer being accepted, a written contract was entered into between myself and Captain Dickerson, of the quartermaster's department, in behalf of the United States, approved by General A. S. Johnston and more, so signed by various officers on the General's staff such as Major Fitz-John Porter, Drs. Madison, Mills and Bailey, Lt. Rich, Colonel Weigh and others, a copy of which is now on file in the War Department at Washington. I also was furnished with a copy thereof, which was unfortunately destroyed during the war.

I am now getting old and feeble and am a poor man, and consequently unable to prosecute my claim as it probably should be done. For that reason I respectfully apply to you with the desire of entrusting the matter into your hands, authorizing you, for me, to use such means as you may deem proper for the successful prosecution of this claim. I would further state that I have been strictly loyal during the later rebellion, and during the most of the time in the war in the employ of the Government.

Trusting confidently that you will do me the favor of taking the matter in hand or furnish me with your advice in the matter, I have the honor, etc."

When I arrived here Bridger was away, but being an old friend and desiring to help him all I could, I did everything in my power to get the Government to acknowledge and pay this just claim but we failed. They have never paid the claim or paid for the property. When Bridger died in 1881, I raised a monument to him in the cemetery in Kansas City and at the unveiling of the monument gave a short biographical sketch of Bridger which has been published, and herewith attached.

W. A. Carter, a very cultivated man, was the sutler at Ft. Bridger and he took a great interest in the country. The gold mines at the head of the Sweet Water near the South Pass had been discovered and opened and was causing a great deal of excitement and a good deal of emigration to them.

On August 23rd, 1867, I received the following letter from Jesse L. Williams on the work on the Central Pacific:

West Chester, Penn.

"While resting at a friend's house one half a day, I write you. Have been in New York 10 days. Saw Mr. Huntington yesterday. In his mind their general route from the West seems to be settled. They will run north of Salt Lake, not crossing the narrow point but keeping entirely on north side and thence to the mouth of the Weber. He has no idea of going up Bear River. His engineers have run up Weber Canon and he thinks it not very difficult, probably requiring no grade over 90 ft. I wish I could be there with you.

Saturday your dispatch from Fort Bridger was received by Mr. Ames. I am glad you are getting along so well, hope your health is improving. Col. Seymour was at Fort Sanders on the 20th but we do not hear from Mr. Blickensderfer.

I could not vote in the new board for the new contract. Price very high, \$80, to \$96,000 per mile west of Crow Creek, not including the Wasatch Range, but stopping just east of it. This heavy work should have gone with the light or else the first contract stopped at Laramie River. There are other objectionable provisions but I presume the company will at the proper time build through the Wasatch Range.

On your way back I think it would be well to note particularly

which of the bridge foundations should go in this fall, so that the work may not be hindered by high water, particularly at Laramie, Medicine Bow, &c.

I think it may not be necessary to lay the track over any of the heavy cuts or fills at the Black Hill Range with temporary track. Examine and see if by putting on force in time you cannot take out the cuts so as not to delay the track materially. This running over work with a promise to cut down in a year or two is a great cheat on many roads. The cutting down is often not done for many years and the work is discreditable to all concerned.

The bridge crossing remains unsettled and no doubt will until you return. I read to the board a preliminary report, giving estimates of the three crossings with iron bridge at each. If I had a clerk here I would send you a copy of results. I may say the difference between all three crossings is less than I had supposed. I embrace the idea of cutting down and filling up to 30 ft. grade in all the lines. I make a suggestion in regard to starting point A. I think it ought to be placed about a mile further north bringing it in line of the Bridge (if Omaha is adopted) avoiding the curve on the high trestle and shortening the connection with the North-western one mile and with the Rock Island & St. Joe slightly. I do not think the company would make any great sum out of their quarter section in Section 2. As to section 3, it has no value in either case except for cut lots. But I will talk with you about this. Mr. Dillon, who was there thought the company's ground ought to be much regarded.

The board desire me to continue my investigations. I hope to go out in October and examine at low water, taking Kansas City and Quincy in my way. I go to Havre De Grace tomorrow to examine bridge.

There is one fact about the Missouri Soundings that had not occurred to me. The channell deepens in high water and fills up in low water, so that soundings taken on the ice are not conclusive as to the depths in high water. Mr. Chanutes soundings at Kansas City show a difference of 5 to 18 ft. between February and May. At St. Louis the river deepens 18 ft. When we get our pier in it will scour quite deep between them."

From Fort Bridger, I followed Reed's line up the Muddy and over the divide to the Bear River Valley and thence to the head of the Echo. I examined this country pretty thoroughly and was satisfied that changes could be made that would greatly benefit the work and grade. I followed down the Echo Canon to where it enters the Weber and followed the Weber through the narrows to the Salt Lake Valley. The line through the Weber Valley was a good one but at the narrows it was a difficult line to locate and needed close examination.

On reaching the Valley, I followed the regular traveled road towards Salt Lake. General Rawlins, who had a great deal of curiosity in relation to the Mormons and their methods of living, was anxious to go into some of their houses. We came to a double house where I happened to know the parties and we stopped on the plea of asking for a glass of milk. The woman in the house received us very cordially and brought out the milk. I told Rawlins that it would not do to take up the discussion of Mormonism with the woman or

or people living in the house; that we could talk about anything but that. While we were sitting there talking about the country and about what they raised, etc, and waiting for the men of the house to come, a little boy came in from the adjoining rooms of the house. This was a double-house but there was no connection between the two. As the little boy came in, he made a movement as though he was going under the bed and the woman asked, "Jimmie, what do you want?" and Jimmie said, "I am after father's slippers. Mother says father is to stay with us this week." This settled the question with General Rawlins as to the method of their living.

We had been without water all the way from the mouth of Weber until we struck one of the very hot springs where the water ran across the road which we were travelling on. The darky driving the ambulance was very dry and he got down off of the wagon and ran to this little stream for a drink. As he stopped over, both of his hands went into the hot water. He jumped up and said, "Law, Massa Rawlins! hell close by here." The water in this spring would boil an egg in two minutes and while the water did not scald the darky, it scared him.

// We kept on to Salt Lake reaching there on the 30th.

General Rawlins, being the chief of staff of General Grant and General Grant being a candidate for the Presidency, did not want to compromise himself or the General in any way on the Mormon question, which was then under discussion and we therefore pitched our camp at Camp Douglas which is up on a high table to the South-east of the city and commanding a view of the city. While we were here the Mormon authorities paid every courtesy and attention to General Rawlins but he only went out once with them to the theatre and once to a reception and with all their ingenuity, they could not draw Rawlins out. Rawlins was very diplomatic.

I have given Mr. Redd's impressions of Salt Lake and mine agreed fully with him. After traveling thousands of miles over the dusty deserts of the country, this Mormon city with its running water in every street, where every yard had fruit in it, with apricots ripe at this time, was a paradise to us, and it was always considered as such by the engineers.

In writing home I said:

"When one strikes this valley and city after being two months in a wilderness, he is very favorably impressed. Its wheat and oat fields which cover every available portion of land, its orchards, fine fruits and wines are all very nice but when one comes in contact with its people and realizes how much more the same labor would bring in any other country, he cannot see anything that would induce him to settle here. I have seen President Brigham Young, his wives and children and all the dignitaries, but as yet I have not seen a woman but what seemed contented but all appear to desire to wish that polygamy was a relic of the past, and it must some time fall.

We are camped at Camp Douglas, three miles from the city. The Gentiles mostly call on us, though the ^{of the Church officials} Mormons give us great attention. Brigham Young was at the head and was very talkative. His wife, Amelia Folsom, of the Bluffs was with him. It is whispered to me that Amelia already has a rival. The temple, tabernacle, President Young's house and garden, the City Hall, State House etc. are all fine buildings. The theatre is the best I have seen west of Chicago; better than Debars at St. Louis and about the size of Wallacks, New York. It has the finest scenery, appointments, &c. that I have seen; equals any in New York. Couldock and his daughter are starring it now and the stock company of native talent is excellent. We have been twice; seen him as Iago and as the Advocate in the Lost Cause. Everybody goes to theatre, men, women and children. All trade here is barter, swap; no money. I have seen whole settlement with not a hundred dollars in it. They go to theatre and pay in wheat; to church and pay in onions, &c. The number of children is astonishing; it beats all I ever saw. I stood on corner of one block and counted 72, all belonging to that block.

Mrs. Chetlain, Mrs. Tracy and several of the Gentile ladies have been very attentive; send us fruit, get up parties nightly; and Mrs. Chetlain and Genl. desire especially to be remembered to you. Mrs. Chetlain goes East this fall and says they will never get her back here; is very bitter on the institution.

Brigham Young preached a sermon on Sunday in that tabernacle which most of our party attended. His text was "The Duty of Men Marrying." He said that he wanted everyone to understand that he did not marry his wives for love or lust, but because it was commanded by God that it should be done, that they all, young and old, should be made mothers in Israel, and wound up by saying if the young men did not marry the girls, he and the old men would." As to polygamy he said, "The world could not crush it out or stop it; God only could and then by revelation" and urged all take one, two or three or a dozen wives as they wanted and could support. He begins to squint at a revelation doing away with that crime. //

The amount of work done in Salt Lake is astonishing. They are raising cotton getting three or four hundred pounds to the acres. Every woman and child works, either at the spinning wheel, loom or in the field, and if woman is made for the life they lead here, certainly the Lord's hand lays heavily on them. They are bearing a cross for their views that is beyond anything I ever expected to see. The only amusement they have is the theatre and all go, young and old, big and small, babies and all.

The scenery is magnificent. The springs the finest I ever saw; sulphur, soda, iron; hot, warm and cold, and some of them so strong one cannot hold his hand over them. Salt Lake is a beautiful sheet of water but its shores are very hard to get to and the lake is shallow; one twenty-fifth of it is salt.

From here 200 miles west the country is little more than a desert with isolated mountains rising out of it; then you strike a country that is being prospected for mines."

On September 30th, 1867, I wrote my children, Lettie and Ella, the following letter:

Salt Lake City.

"Tomorrow, after all my mules are shod and all my wagons repaired I start home, going through a wild, mountainous country hardly ever trod by white man, and you will not hear from me until four weeks or more. Seven hundred miles of marching and then I shall reach Ft. Sanders.

You could hardly believe that here in this mountain basin is a city as large as Council Bluffs and Omaha put together; streets lined with fine shade trees, a mountain stream pouring down the side of each street. With all the trees is the garden loaded down with apples, pears, peaches, plums, grapes and apricots all ripe, and Pa's tent has been well supplied all the time. This is all that there is inviting here. When I see so many children running around the streets being brought up in the misery and crime that they are here, I am glad that my children are not doomed to such teachings.

You have all heard of Great Salt Lake and Great Salt Lake City; both from my camp are in full view--one embowered in trees, the other a vast expanse of water looking like the ocean, salt, dotted here and there with beautiful islands. One drawback it has--its shores are muddy and marshy so that the beach is not, except at one or two places, approachable. It has none of the beauties of our Eastern Lakes, though the water is twice, yes, three times as salt, and what is most wonderful all the mountain streams that come pouring down into it are from fresh water; so somewhere in it must be immense beds or springs of salt.

I have been in camp since I have been here three miles from the city and getting ready to return and very busy, so much so have hardly had time to see the sights. I send you a photograph of all our party, that is, that are with me; then I have one company of cavalry and one company of infantry, 200 in all, as escort to keep off the Indians.

The pony is fine and the black mare as fat and plump as when she left."

During my stay at Salt Lake, I made as careful an examination as I could and from all the information I could get, I became satisfied that our true line West was north of Salt Lake and that if the Bear River arm of the Lake could be crossed in three miles distance in shallow water, it was better to do so rather than to overcome the high elevation over Promontory Point with the heavy work involved.

In coming across the country and finding my parties so short of escort, I had left a large portion of our escort with them so that at Salt Lake, General Rawlins ordered a Company from Fort Bridger to join us.

After our trains and equipments had received the needed repairs at Camp Douglas and our supplies replenished, on September 4th, 1867, we left Salt Lake with one company of cavalry and the company of infantry from Fort Bridger under Bvt. Col. Mills, a very energetic and efficient officer, who, during the entire trip, rendered us valuable service.

Desiring to examine the approaches to Snake River with a view to a through line from Promontory Point to Puget Sound and also desiring to settle, without a doubt, the question of the feasibility of any route to Reed's Pass or Humboldt Wells in the Humboldt Mountains from the South Pass or near Promontory or Bitter Creek, superior to the route we then had, I determined, although late in the season, to

return that way and give the country a thorough reconnoissance. We marched rapidly north on the stage road leading to Idaho. Passed through the numerous towns that border the Lake and reached Bear River Bridge on September 6th.

2-13
Notes
The day before we left Salt Lake, Brigham Young and the apostles started north on the same route for their yearly conference tour. They moved very slowly and at every settlement and town in the valley all the people turned out with bands and flags and gave Brigham and his party a great reception. We generally followed into the same towns a few hours later and although we had a long train with 200 soldiers and with General Rawlins, General Grant's distinguished chief, there was no reception given, no flags came out and it caused Rawlins to think that there was not much patriotism or love of the Government in the valley but I told him that that was not so that it was simply because these people were mostly foreigners and knew nothing about our Government and no one else except those connected with the Mormon Church.

On reaching Bear River, I wished to follow it; therefore had to send my teams around while I followed the bend of the river through the canons, watching Mr. Hodge's line closely, passed successfully the canons at the north, the Fallows Canon and the volcanic formation at the northerly bend of Bear River. Bear River valley is generally from one to three miles broad, occasionally spreading out into independent valleys, such as Cache, Bear Creek, etc. It is hemmed in by the Malade and Snake River and Green Mountains on the North and East and the Wastach on the South and West. From the point where our line from Green River to the head of Echo crosses it to its most northerly bend, it is about 100 miles. Then it flows directly south until it strikes Salt Lake or near the latitude where our line first crosses it. The valley is generally a succession of table lands which often require heavy grades and work to reach; however, a feasible line in grades, curvature and alignment could be gotten up but no cheaper than the Weber Valley line. At its northern bend, known as Cape Horn, the formation is volcanic. The old crater exists there. The earth and ledges of rock show wide crevices, which are very deep. Soda Springs, superior to any known in the world, exist at its northern

bend and pour out a stream of pure sparkling water, the finest I ever drank. From the summit, which is only a few feet above the Bear River Valley, between that valley and the Snake, I could stand and look across and see the willows on the Port Neuf which runs into the Snake, showing there was no obstacle from passing ^{through} the rim of the basin without any heavy grade. From Bear River Valley, there are several openings to Snake River, known as Marsh's Valley, the Port Neuf gap, and Black foot gap. I examined them all, and all are feasible for any road running north or south. I selected the Blackfoot route, and pushed over to the waters of Snake River. After passing the north rim of the basin the country changes, the valleys become more level, wider, and more luxuriant in the growth of vegetation. The northern slopes of the mountains are finely timbered. The streams are full of fish--salmon, trout, &c. The Snake River mountains and Bear River mountains run out spurs north and south extending north to Snake River Valley. They are high and precipitous. The streams draining them and flowing north to Snake River are all divided and separated by the spurs of these mountains. There is no difficulty in following the valleys of any of the streams into Snake River Valley, but when you undertake to cross the country at right angles to the drainage, it is an impossibility. The mountains are so high and the distance in which to overcome them is so short, that no one would think of endeavoring to get west through this country from the South Pass by any line north of Hodge's Pass, latitude $41^{\circ} 41'$, via Bear River Valley. The entire feasibility of a railroad from several points on our line to Snake River valley, and thence to Montana, Idaho, Oregon and Washington territory, was fully demonstrated. It would be by far the best line from the Atlantic to the Pacific, would avoid the high elevation of the Wah-satch and Sierra Nevadas, with their heavy grades and troublesome snows, and no doubt ere long it will become the great through route from the northwest, and control the trade and traffic of the Indies.

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When we reached the waters of the Snake, it was at Gray's Lake. There had been heavy fires in the mountains which had driven out a great many of the grizzly bears who were in and about the Lake. I immediately cautioned all the soldiers and everyone connected with

party, under no circumstances, to hunt them or shoot at them, for I knew they were a troublesome animal for anyone to handle unless they were thoroughly posted.

Having satisfied myself as to the approach to the Pacific by this route over which in a latter day the Oregon Short Line was built, I turned East, with the South Pass as an objective point and crossed into Salt River Valley, followed it to its source, camped on the evening of September 14th at its head, preparing to make an effort to cross the mountain ranges between it and Green River.

Before climbing this ridge, General Rawlins, not feeling well, I had gone ahead with our camp equipage and pitched our camp at the top of the mountain. As we raked away the snow, we found plenty of mountain strawberries under it. I also saw signs of the bear there. After pitching our camp, I went back to see about getting our train up this mountain ridge. We had to put out our prolonged ropes to help the mules up with the infantry. About four o'clock, after I saw the train well along, I returned to the camp with my guide (Sol Gee). I missed Rawlins and Dunn. The rest of the men with me were back with the train. I asked the cook where Rawlins was and he said he thought they had gone out after a bear as a bear had passed there and they followed him. I told Sol Gee to get his rifle and I got mine and went after them. We had not gone very far before I heard two shots. I said to Gee, "Those fools have shot at that bear and if they have not killed him, we will probably see him coming this way." It was but a few minutes until we saw Rawlins and Dunn coming towards camp and the bear following them. I said to Gee, who was a very fine shot, to hold his fire and that I would ^{step down below the path they were following and} get the attention of the bear and would shoot at him, but if I did not bring him, for Sol Gee to be sure to get him. Gee looked on very anxiously. Rawlins and Dunn passed us. I saw that the Bear was wounded but traveling very fast. As soon as he saw me, he started towards me rather slowly. I drew on him and fired but hit him too far back. He kept on coming. I stood my ground and Gee shot at him, hitting him between the eyes and dropping him. When Rawlins and Dunn came to where the bear lay, Rawlins, with no

choice language began to abuse himself and Dunn for having disobeyed my order. Nothing I could say or do seemed to mollify him. He thought that he and Dunn ought to be executed then and there. We called the boys from camp, had the bear skinned, taking his paws and everything. I gave the hide to Rawlins and the Paws to Dunn. General Rawlins had the hide cured and at one time had it in his office when he was Secretary of War. While this was a dangerous experiment, it was a good lesson to all the rest, for there is no telling what would have become of Rawlins and Dunn if we had not happened ~~to come to camp at the time we did.~~

The next day, upon ascending the mountains, it commenced snowing, and for several days we struggled over the mountains in blinding snows, our stock without feed, and our trains often hauled up the mountains by the infantry. The road was horrible, and it had to be built by an advanced pioneer corps. At one time it looked very much as though we would be entirely blocked up by the heavy snow that was falling. We crossed seven distinct ranges, and on the 19th succeeded in getting part of our troops down into the Piney, a tributary of Green river, a portion of our train having been left on the last mountain and the stock driven forward to obtain grazing. The mountains are very high and precipitous, with very few passes over them. They are covered with fine forests of pine. The valleys lie deep, and the streams find their way through them by long, narrow canons, that man or beast can hardly penetrate. During the high-water season most of the streams would afford sufficient water to run logs from their sources to Green river. The heads of the Piney, La Burger, Bitter Root, White Clay, Marsh, Horsehead, and other tributaries of Green River and New Fork, have heavy forests of pine and spruce, and we shall have brought to our line by way of Green river an immense lumber and timber business from this region. These pineries lie from 100 to 150 miles north of our crossing of Green River, and that river during nearly all the spring and summer months affords sufficient water to run ties, logs &c. to our crossing.

After reaching Green river we struck north of west across the country to the base of the Wind River Mountains, following them to the

South pass, and entered the Sweetwater mines, this year discovered and opened. The Indians had been so bad that very little prospecting had been done. A few quartz veins had been opened. Only a district of country some 20 miles in diameter has been prospected, and fair yields of gold have already been obtained. The mines we visited were those on the tributaries of the Sweetwater, at the eastern base of the Wind River mountains, the head of Wind river, and the Porpogies. I have no doubt but that this belt of country is a continuation of the gold belt discovered by me in 1865 on the Big Horn Mountains, Powder River and Black Hills. When developed it will support an immense population and bring to the traffic of the road a business that today cannot be estimated. Portions of this country are susceptible of cultivation. The valleys of Wind river, Porpogies, Big Horn and the eastern base of the Big Horn mountains are favorite wintering places of the Indians.

9-13
The principal mines opened here was known as the Miner's Delight and the miners got together and gave us a lunch. They also made a present to Rawlins and myself of a claim on the Miner's Delight Ledge. At this lunch there was plenty to eat and drink, which was bad for my outfit. The miners here told me that the Indians were very bad along the Sweetwater and that I must be very careful. I wished to get away from this camp as soon as possible and about four o'clock, I moved out, but when we started I could not find my chief guide, Sol Gee, and knowing his love of liquor, I had no doubt he was laid out some where. I left Major Dunn who was a great friend of Sol, to find him and bring him to us, but if he did not find him in a very short time, to join us because there was Indians on the road and it would not do for them to come on later in the day. I paid no farther attention to Sol and moved out eight or ten miles, finding plenty of Indian signs on the way. We went into camp and to my astonishment, Dunn and Gee were not with us. It was then dark and I said to Rawlins that I felt I ought to go back after Gee and Dunn and I took the squad of cavalry with me and went up the road. When I got about three miles, I heard the crack of a rifle, then of another and the shots seemed to come towards us.

0 13
I thought it must be Indians but to make sure, I told Adams, who was with me, to call on to the Indians and see if he got an answer, but the answer came from Gee and we found Dunn and Gee ahead of us coming up the road. They thought we were Indians and Gee said, ^{it being dark,} if they got behind a couple of boulders and shoot, the Indians would get off of the road and they could get to camp. I was gratified to find Dunn and Gee safe. I asked Dunn why he did not obey my orders and he said, "Well, General, Sol was not in a condition to travel and I did not have the heart to leave him. I sobered him up and as soon as he could sit on a horse, I brought him along and he is alright now."

The Wind River mountains on the north and west, and the Big Horn on the east, form an immense park, sheltered from the cold winds and heavy snows of that country, while the Sweetwater valley that borders this country on the south is generally for from three to five months in the year impenetrable on account of the deep snows. In June, the prospectors informed me, they crossed the Willow and Sweetwater on snow bridges. An examination of the Sweetwater valley and adjacent country convinced me that the opinion of this country that I had always advanced was correct--that it was impracticable for a railroad, ^{but} the routes south having lighter work and easier grades, while, even if comparing favorably with the Bitter Creek route or the Bates route, its winds and deep snows would drive us from it; and the further fact was to be considered, that after crossing the divide of the continent here, we would be forced as far south as Hodges's pass, latitude 41° 40' or Echo canon, to get a feasible route west, so that nothing would be gained by following the valley of the North Fork of the Platte and the Sweetwater, with its high foot-hills and numerous canons. *It was also 60 miles longer and the government would not accept it.*

We followed down the Sweetwater with our trains, while I examined the country to the south, crossing over ~~top~~ the northerly point of the Red Basin, to Bates' line and connected there my reconnoissance with my westward trip.

The Red Basin plains extend to within 10 miles of the South Pass, and are for the entire length of the Sweetwater valley only

10 to 20 miles off. When we got near the mouth of the Sweetwater, I met some miners who told me there was a body of Indians just through the Whiskey Gap of the Seminoe Mountains; that they had wintered in these mountains. I knew these were the Indians who had made all the difficulty during the past season (who had killed Clark and Brown) and I thought here was a good opportunity to strike them and General Rawlins was willing so I gave Captain Mizner orders to take his company of Cavalry and go to the south end of the gap and reach there by daylight, while I would take the company of infantry and the rest of the command and follow down the Sweetwater and go into the north end of the Gap, and we would probably surprise them.

I sent guide Adams with Mizner, but they had quite a distance to go around, were dilatory in their movements and the Indians got word of them and got out long before we got there, which was a great disappointment to me.

After passing through the Gap, we saw some buffalo some two or three miles off to our left. Rawlins was very anxious to have a chase after some buffalo, had been during the whole trip, and I finally agreed, against my own judgment, knowing that these Indians were in this vicinity.

0-13 I put the train and the cavalry on the trail leading from Seminoe Gap to the Yampa and White Rivers, which crossed our trail west where Rawlins Springs is located. I gave them instructions that if they saw any smoke signs from us or heard us shoot, to come to us immediately and for them to keep out flankers on their left to watch for us. I knew the buffalo would drift away from the train because the wind was blowing from the train and we had to make a long detour to the East to get to the windward of the buffalo. Just after we got to the windward of them, on a high ridge, I discovered a band of Indians in a hollow between us and the buffalo. How they had escaped my view, ^{before} I do not know. The Indians had not yet seen us but I knew we were in danger. I therefore set a fire, dismounted my men and put my best shots in between me and the Indians, moved on down the ridge, hoping that I had given such particulars that the cavalry would see ^{our smoke signs} us. As we moved along, the Indians followed us but keeping at rifle distance from us. They did not seem to have discovered my train. The buffalo fled before both of us and none of us got a shot at them. Finally, after travelling two or three hours down the

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ridge, which was lading towards the North Platte River and away from the train, the cavalry saw thw smoke and came towards us but they were a long distance off when they started. The Indians saw the Cavalry before we did and when I saw the Indians turn around and start towards the Seminoe Mountains again, I made up my mind that the Cavalry had seen the smoke and were coming towards us. I could not tell how many Indians there were in this band as they were very much scattered but there were several small bands of them and I would judge there was a hundred or more of them.

When the Cavalry got to us, Rawlins said he would not take me off on any more buffalo hunts in an Indian country. X

We got back to the train and camped at Red Butte Springs on what was known as the ^{Seminoe Gap} ~~Plaze~~ Road or Trail. The next day I struck Bates and Appleton's trails and their line and moved west, crossing the West Range of the Rattlesnake Hills, East of the North Fork of the Platte. I pushed through here on the Blickensderfer and Seymour trail which they made going East over a pass known as the Sandy Pass Gap or Fremont Pass of 1849. Having visited this section of the ground before, I was familiar with it and struck East as far as possible, meeting Mr. Bates' party at Lumbard's Spring and Mr. Maxwell's party on the North Fork of the Platte some eight miles south of the Medicine Bow. Messrs. Bates and Maxwell were seeking outlets to their lines west of the Rattlesnake Hills and had no means of reaching a connection except by the canon some 10 miles north of Brown's Crossing or by Sandy Gap, both of which I considered impracticable, but as Mr. Maxwell had obtained a very good line over the eastern range of the Rattle Sanek Hills with light work and easy grade, I instructed him to make a connection with Brown's line ~~but~~ by way of the canons and with Bates' line by way of Sandy gap, and locate on the best line east to the crossing of the Medicine Bow. Mr. Bates was instructed to continue his surveys and make connection by the way of Sandy Gap on the West and Medicine Bow Valley on the East.

Mr. Bates had been devoting the past three weeks to a reconnaissance of the country with pack mules, between the Medicine Bow River and the North Fork of the Platte, following up Kellogg's Fork and Bates's Fork and also had given the North Fork of the

Platte canon through the Black Hills an examination Seymour and Blickensderfer had recommended. He reported the country high, broken and impracticable for any railroad line.

Leaving my escorts here, I pushed on over the line run by Maxwell to an examination of the line north of Cooper Lake, which I had ordered to be run by O'Neil, from Fort Sanders to ^{the} Rock Creek, ^{country} connecting with the Brown line there or at the Medicine Bow. He found this line feasible and practicable, and I ordered it to be located. I pushed on to the Black Hills to look at the lines over there which had been in dispute ever since I left. Evans, Maxwell, O'Neill and Reed opposed the lines Seymour had run but the company apparently had followed Seymour's advice to a certain extent. I found that work had been done on three separate lines and as I considered this one of the most important lines of the road, and as the controversy is an interesting one, I will take it up from its beginning and give a consecutive story of it.

I have given one of Seymour's letter when we were at Cheyenne in relation to some of the changes which he suggested.

On July 17, 1867, I wired Oliver Ames and Jesse L. Williams, Government Director, that I could obtain a line from the summit of the Black Hills with 90 ft. maximum grade; could obtain same maximum from Crow Creek to summit at a considerable less cost. I recommended that it should be done.

-On the same day, Mr. Seymour wrote me as follows:

Cheyenne.

"I have the honor to inform you, on Wednesday the 10th instant, that, after a careful examination of the line from this place to station 1200 (Westerly over the Black Hills range) I had become satisfied that a maximum grade of 80 ft. per mile could be adopted to the ground at about the same expense at 90 ft., the present ruling grading; also that, in my opinion, the line at station 990 (where the high bridge occurs which crosses a branch of Lone Tree) could be so changed as to avoid the bridge, without material additional expense; also that the force of from 60 to 100 men and a large number of teams now employed by the company in the vicinity had been, and were now, doing work that, in my opinion, would be of no value upon the line, if changed in accordance with my suggestions; also that I would be happy to accompany you over the line as soon as you could make it convenient to do so, and point out such changes as I had to suggest, both with reference to the ruling grades and the avoidance of the high bridge.

On the morning of the 11th, finding that you were not prepared to examine the line with me, I returned to the Carmichael Ranch, and have since followed the line to the summit of Evans' Pass, and am happy to inform you that, in my opinion, no serious obstacle occurs to a reduction of the maximum grade from 90 to 80 ft. per mile on the western slope of the Black Hill range.

I trust that it will be useless to argue with you the great advantage of making this change in case it shall be found practicable. The same engine will have two more cars over an 80 ft. than it will over a 90 ft. grade, so that we may calculate an advantage of, say,

100 passengers and twenty tons of freight; to every train that passes over it. The additional value to the company of the 80 ft. grade cannot, in my opinion, be less than a quarter of a million dollars. I would therefore urge upon you the importance of running immediately a carefully located line with a maximum grade of 80 ft. per mile (or 1.5 ft. per 100) for the purpose of instituting a comparative estimate of its cost as compared with a 90 ft. maximum. I would also suggest that while this is being done, the force employed by Mr. Carmichael should be employed only upon such portions of the line as would not be effected by the change.

Through the assistance of Mr. Hurd, Div. Eng. on Construction, with his small party of two, and a 50-ft. tape measure, I have run an experimental line from station 975 westward (which avoids the high bridge) and the level and transit notes of which I now hadn you in order to enable you to make a comparative estimate of the cost of the two lines. I would recommend the adoption of my line (with such improvements as it is susceptible of) at an additional present cost of from \$75,000 to \$100,000. I think that even a better line than the one I ran can be obtained by further careful engineering, but my facilities were too limited to allow of any further experiments of a satisfactory nature. The line which I had you brings into use more of the work already done than any other that I could suggest.

On following the line from the crossing of Crow Creek to a point some two miles west of the crossing of Dale Creek, I was impressed with the idea that the engineer in making the location had sacrificed too much of grades and cost to alignment, and that by the introduction of more frequent curves of easy radius, the cost may be materially reduced. The adoption of this principle, within reasonable limits, is most certainly justified in a country where the surface in every direction is generally rock of the hardest character. Some weeks before leaving New York, I wrote to you requesting that I might be furnished, upon the present trip, with a detailed map showing alignment and topography of the line up the Lodge Pole and over the Black Hills. Such a map would have facilitated my examinations very much, and might possibly have led my mind in some cases, to different conclusions."

On July 20, 1867, I received another letter from Silas Seymour as follows:

Cheyenne.

"Your note of the 17th instant in reply to mine of the same date, with reference to changing the maximum grade from 90 to 80 ft. per mile, over the Black Hill range of the Rocky Mountains, was duly received, from which, and subsequent conversations with you, I infer that you do not favor any change in the present location, and that you think that a maximum grade of 90 ft. per mile is the best, under the circumstances, that can be adopted; also that you would not recommend the Company to incur any additional expense in reducing the maximum from 90 to 80 ft. per mile.

You have, however, very kindly placed Mr. Maxwell, Asst. Engr. and party under my direction, for the purpose of making such examinations in the field, between this point and Fort Sanders, as I may think proper, with reference to a change of line. Although the personal superintendence of these surveys, does not, in my opinion, come within the legitimate sphere of my duties as Consulting Engineer of the Company, and will interfere somewhat with my proposed plan of accompanying you over the line to Salt Lake, yet I consider the matter of the grades of immediate and primary importance to the company; and on the decision of which will admit of no delay inasmuch as contractors are now at work upon some portions of the line involved in the change of grade, and others will soon be upon the ground.

I have, therefore, concluded to avail myself of the services of Mr. Maxwell and party as soon as he can be placed at my disposal, and will immediately prepare the necessary instructions to guide him during my absence to Bridgers Pass and back to this place, with Mr. Blickensderfer.

In the meantime, I will endeavor to communicate with the President of the Company in New York, and obtain his views and those of the Directors, with reference to the amount of present additional expenditure that the company would be willing to incur in order to

effect the proposed change in maximum grades. And I would like very much to have you lay your views of the question before the President, at the same time so that he may have all the information possible before him while considering the question.

I understand that you have ordered the change of line, suggested in my letter of the 17th, so as to avoid the high bridge over the branch of Lone Tree Creek at station 900, and have ordered the construction force under Mr. Carmichale to commence work upon the new line, all of which I have no doubt will be approved by the company. I have so much confidence that the company will decide to change the location from the present line to the one which I recommend, involving a maximum of only 80 ft. per mile, that I will ask you to notify the engineers in charge of construction to abstain from doing any work, for the present, upon such portions of the line as I shall notify them may be changed by the new location, and I will see that no delay in the prosecution of the work is occasioned by such orders."

On July 24th, 1867, I wired Mr. Sidney Dillon as follows:

Ht. Sanders
"I want answer to my dispatch to company about change of line and grade over Black Hills. I must push west. The Indians hold country from here to Green River and unless I get out there we will fail in all our plans for 1868. Brown, chief of party west of here, killed yesterday after fighting two hours and losing his stock."

On July 26, 1867, I received the following from Oliver Ames:

Grade one hundred and sixteen feet. Answer. Nothing must delay progress."

This dispatch was so ambiguous that I could not tell exactly what it meant but it indicated to me that I could use any grade that would save work, but I knew there was no necessity of a line over the Black Hills more than 90 feet and did not propose to put in any other.

1867
On July 26th, Mr. Ames wrote me the following letter:

North Easton, Mass.
"We received your telegrams saying that you could make an 80 foot grade at \$200,000 extra cost, and telegraphed you that the grade of the charter (116) feet would answer. We did not have sufficient data to be able to decide the question.

The great desire of the country is a rapid completion of this road and we do not wish to delay the work by any very heavy cuts, when we can do this work after the roads gets in operation. When we are running the road we can reduce grades but to get it running we will make the grades in all places, if it will more rapidly complete the work, at the maximum grades allowed by the charter.

Durant and his friends are endeavoring to injure your and our standing before the country by calling us slow. I don't wish to be liable to that charge by attempting to reduce grades to delay the work. Let everything be pushed ahead as fast as possible."

On July 31, 1867, I received the following letter from Government Director, J. L. Williams:

Ht. Wayne
"Yours of the 21st inst. came today and by same mail one from Col. Seymours, 15th of July.

Your telegram about 80 ft. grade never came. I was not aware that a revision of the line over the Black Hills was in the programme or I should have been still more anxious to go out. It is all right if the line can be improved, but, as I have said to Col. Seymour in a note by this mail, we should look also, as no doubt both of you will, to alignment and directness and not too much add to distance and curvature. A judicious medium should be observed. You suggest that 80 ft. grade on west slope could be had with increase of 2 1-2

miles distance. That Increase I think would be quite too great for a saving of one ninth in the rate of ascent.

I have never advised an undue shortening of the line, at expense of grade or cost, for the purpose of lessening the Government Subsidy to the injury of the working of the road. Yet with \$48000 per mile the Government might find ground to sub-lease any marked or injudicious elongation of the line to avoid grading that is only moderately expensive. The work should be located upon sound principles. Of course, if the general slope of the mountain is indicated to 80 ft. grade, it should be adopted, but I desire to guard against a forced reduction at too great a sacrifice in alignment and distance. You and Col. Seymour can judge of this.

The avoidance of a long and high bridge span at Lone Tree is well if feasible. Such a bridge on the mountain is a bad feature. I wrote you a week ago, care of Mr. House, in regard to your employing Mr. Webster or some other experienced engineer on the finished road. I told Mr. Dillon that such an engineer was needed.

I expect to be East from 10th to 20th of August; letters here will be forwarded; write often. I might have added the consideration that if you must adopt 90 ft. or over at Rattlesnak Pass the reduction at Black Hills is somewhat less important. The case is not exactly as the one at Omaha. I am very much gratified that you have nothing over 35 ft. east of Crow Creek.

Can it be true that Mr. Brown has been killed by the Indians? I thought him a valuable young man."

As I travelled West, I recieved ~~letters~~ and telegrams from the Engineers who were making surveys over the Black Hills, that the changes were detrimental to the line and I became very anxious and very much alarmed and kept communicating with New York in relation to it. and on August 1st, I received the following telegram and letter from Oliver Ames in answer to one I had sent him on July 20th: 1867.

New York.

"Let the line be located and under contract immediately."

"I wrote you yesterday in answer to your letters of July 20th from Crow Creek. We are in receipt today of one of July 11th from some place in which you express a fear that Blickensderfer may take all summer to make his decision. This will be unfortunate for us, as I hoped he would have felt the importance of an early decision of this question, that we might have the liberty to issue our bonds in advance for the mountain regions. I hope you will suggest to him that the road is in actual need of an early decision of this matter if it is to be pushed with the speed that the people of the country require.

I said to you yesterday that we wanted to complete the road as far west as possible this season, and that any grade or curve within the limits of our charter might be adopted to hasten the work. I do not, of course, mean by this that you should put in a heavy grade or short curve merely to save a little money, but to save time so that the grading may at all times if possible be ahead of track-laying; and we shall not merely for a good alignment run into heavy cuts that will stop the progress of the track for months. Our reputation today depends upon rapid constructions. When the road is completed we can improve the grades and curves though it will be a heavy additional cost.

Your call for engineers will be answered as soon as we can secure the right men. A Mr. Mansfield (a son of a gentleman who got up our pamphlets advertising our bonds) who has had considerable experience in the Rocky Mountains we have applied to, and who has an application for a place on the road, but have not yet gotten his answer. We will be able in a few days, I think to get the right sort of men; of young and inexperienced men we have any quantity on applications, and I have been working over the large file of

applications here for places as engineers on our road, but they all seem to be too old now to answer. I have in view a very good locating engineer and have written him but he has not yet answered.

In your urgent need of men why not take House and some of the men from the office until you get supplied with competent engineers, to do and locate the heavy work of the mountains and to look after the construction you want men of experience and not the class that might have looked after the work on the Platte Valley."

On August 3rd, ¹⁸⁶⁷ Government Director, J. L. Williams, wrote me as follows:

Fort Wayne.

"I wrote you a few days ago to Fort Bridger, in answer to yours from Cheyenne. Of course, I will not be misunderstood in regard to lowering the maximum grade on the Black Hills. I am in favor of it if a careful examination on correct engineering principles shall indicate it as proper. Col. Seymour has large experience in close investigations of this kind - more than I have - and it is well that he has, undertaken a thorough re-examination, for which he is very competent. I meant to suggest a caution, which I presume is unnecessary, against too much in and out curvature to avoid rock cutting and fills of only moderate cost. We must expect to encounter some work in the mountain section and with a mountain subsidy. The colonel no doubt will present his maps and profiles to the Board and then I shall be better fitted to advise. I am against an undue increase of distance. Figures and estimates ought to show just how much to increase distance and curvature for 10 Ft. lower grade.

I start on the 5th to New York. Board meets on the 15th. What will you do for experienced locating engineers in place of those valuable men killed by the Indians? I fear I shall become an Indian hater. Has not the race fulfilled its mission on the earth?"

On August 5, 1867, I received another letter from Mr. Ames in answer to mine of July 31st, as follows:

North Easton

"I am in receipt of your favor of July 21st, and also letters from Seymour in reference to location of line to avoid high bridge over Dale Creek and make other changes that he thinks will lessen the grade and not increase the cost. It is, of course, desirable to do this, but it is not the desire of the Construction Committee to attempt to lessen a grade when it is going to delay the work. If by putting in practicable curves that will throw us out of heavy work and the cost and time of construction be reduced, such a change will meet the approval of the committee.

We hoped that Carter would have been able to go over the line with you and that yourself, Carter and Seymour, after looking carefully over Evan's line, would have been able to suggest such alterations as would hasten the construction and save hundreds of thousands of dollars. As the road progresses the public become more impatient for its completion and will be satisfied with nothing but most rigorous prosecution of the work. To do this we must get the best line and will have to sacrifice a perfect alignment to rapidity of construction and to bring the cost within the paying benefits. If we make the road cost too much, it will never pay dividends. All these things are to be taken into consideration, and to get the best line the best engineering talent will be required that can be procured."

On August 8, 1867, I received the following dispatch from Mr. James A. Evans:

Omaha.

"I think it advisable that you should return to Sanders to watch change in location. This is important to prevent delay."

It was impossible for me to do this. Mr Evans who had

located this line over the Black Hills was a very able engineer and I was satisfied he had the right line and grade.

On August 12, 1867, ^{Jas. A} Mr. Evans wrote Mr. Sidney Dillon on this question as follows:

"Sometime in June when you were at Omaha, you asked me (as it was then evident that I should soon go West to resume labors in Black Hills) to write you upon my reaching there. I was delayed on the way there, chiefly in completing the work that Mr. Hills was so unfortunately prevented from doing. A great affliction has not brought me to Omaha, which will I trust explain why I write you from here.

To come at once to matters pertinent, and of interest to you, I find that there is a disposition to change and question the location over the Black Hills which it was my fortune, in the pursuit of my duty, to make. The means taken to effect this are briefly as follows: Where grades of 90 feet are used arguments will be pressed in favor of 80 ft. per mile under the assumption that for so desirable an end additional expenditures are warranted.

The first 90 foot grade we have on the original location of Crow Creek, occurs where we leave the valley of a crest to get up on the divide. It is proposed by Col. Seymour to throw the foot of the grade sufficiently further east to get up with an 80 instead of 90 foot grade, hanging to the side hill for a greater distance.

This matter can be accomplished by additional expenditure for excavation and embankment. Here it is simply a question of cost and if the country will incur additional expense - I know and have always known since I became familiar with the locality, that the country was there for either grade, the company felt disposed to pay for.

I have in my location acted up to my instructions and all the light I had. That a line of 80 ft. grade will in this valley require additional expenditure, the profiles when they come in will show unmistakeably. It is so purely a financial question that I am not called upon to determine the matter and I dismiss it with the simple and self-evident remark that the lowest grade is, of course, the best, everything being equal, and if not obtained by sharp curvatures. After surmounting the divide with either grade as wisdom may determine, the grades can for a distance be made below either maximum. On the original location they are so with a single exception which, while in company with Gen. Dodge going over the line, I recommended and felt desirous to change.

This explanation brings us to Station 870 where on the original location a grade of 90 feet occurs again and continues to Sta. 973. While out over the ground by using considerable curvature, I so changed the profile as to reduce the work without changing the grade. If an eighty foot grade is run over this ground the profile will be quite heavy and work will be increased largely. The fact is that here one line occupies the summit of the divide and drops away from even a grade of 90 ft. and there is no argument in favor of an 80 ft. grade that is not equally applicable to a 70 ft. grade, namely the willingness of those who furnish the money to use it for such purpose, and I am very sure that had a lighter grade been used than the one given, similar arguments with the same incentive would have been brought to bear in favor of a change.

Tracing the line still westward brings us to Lone Tree Crossing, the change here is definitely adopted, the chief engineer having honestly, but unwisely, I think, sanctioned the change under what seemed to him a sort of necessity and caused chiefly I apprehend by the fact that in opening the cuttings no good building stone was found for pier and abutments.

I want to be understood with regard to this change of line and shall be so far explicit as to make known what governed me in selecting the crossing of the canon over the line now substituted for it. It could not have been their ignorance as preliminary lines of mine may be found crossing the ground covered by the new line. The depth of the canon if bridged I was disposed to consider of small importance; it is quite narrow not measuring so much as the grade line as fills that will be found occur on other lines.

I desired in every instance when possible to place the line when it could be done without sacrificing profile too much in a position giving freedom from snow obstructions. The original location running as it does on the south side of canon and valley would always have been free from it, whereas I fear, in fact I know, that the change now being made will in winter be subject to continual annoyances from snow accumulations and is only admissable by availing itself of most of the excavations already done on the original line. The change is further allowable by excessive curvatures and the use of a large amount of temporary superstructure such as trestle work &c. short lived and of doubtful safety.

The above is the only divergence from my location up to the time I was compelled to leave; it comes into the original line several miles west avoiding a short piece of 90 ft. grade using instead 80 ft. at the expense of a cut; this is a little summit 24 feet deep in the highest place and 2000 feet from grade to grade. It would be easier to get an 80 ft. grade over the old line than over this change as where the lines approach, the grade line of the change is below the original line causing this cut above referred to. There are other points where 90 ft. grades occur for short distances. At these places the line curve will be put on profile of changes, when we get it will show at what cost.

With regard to the line as located by me, I have this to say and am somewhat confident the future will warrant the assumption that taken all in all in point of profile, alignment and freedom from snow, it is on the right ground. I do not say but there may be points where engineers and others might differ in minor matters, as for instance the policy of increasing curvature to reduce profile and vice versa, but in general terms the result will show that the selection of ground for line over Black Hills has been judiciously and wisely made.

On the Western slope as near as I can learn an entirely new line will be attempted. You will then see what skill your consulting engineer possesses in selecting ground of his own; a different thing I take it from passing over the result of others labor and criticising.

One word as to curvature that some gentlemen on the road are so flippantly disposed to ignore. The opinion that I have is that sharp curves are objectionable and when they are used for the purpose of lightening grades it frequently happens that what is gained in the one respect is lost in another. So important is this matter considered that on English roads they are restricted to curves of 1-2 mile radius (about 2°) by act of the legislature; based upon the opinion of men of ability, men whose work and reputation will live after them, long after that of the present consulting engineer of the U. P. R. R. will have sunk into merited oblivion.

I fear that the only result will be delay; as fast as the changes come in you will be notified of them. I regret much that my sore trouble compelled me to leave the Laramie plains before all the data was obtained.

I have written this letter first because I promised to do so, and in the second place it will perhaps lead to some way by which I can vindicate my labor from the aspersion of those whom I cannot believe are honest, or working as they should do, for the success and speedy completion of this enterprise."

On August 12, 1867, Mr. Oliver Ames wrote me as follows:

North Easton.

"I wrote you Saturday in regard to Seymour. What I wish now to say is that however much we may feel that Seymour is a lazy, inefficient man prone to criticise others and do nothing himself, we must acknowledge he is an extremely plausible man, with excellent ability as a writer and if he has anything of a show for a decent line he will be able to make the most of it.

Now it will not do for us to adhere to any line that we think can be amended by adopting his suggestions. We have a reputation to sustain, and no line of any engineers of ours should be approved merely because it is our line. Seymour if he can make a point against us and in the interest of Durant, will do it. As our consulting engineer and as long as he retains this position it is

our duty to in all doubtful cases advise with him and if he has any practical notions to get them. He has heretofore sat up in his office and done us very little good. If we can now make him work and see how other people earn their money thgouth he may be of no service to us, we can feel that we got a little work out of him for the money he gets.

Our feeling, as I have heretofore wrote you, is to push the work with the highest practicable speed, and we want men enough put on the work to put it through so that the tracklaying may not be delayed. If we can get this winter through the Black Hills doing the light work before winter and the heavy cuts in the winter so that we can run over the Laramie Plains to Bridgers Pass next year, we shall fully answer the highest expectations of the country. But all these expectations will fail if Government does not give us more efficient protection against the Indians. The idea of a Government like ours permitting these roving bands of Indians to take possession of the country is a perfect outrage upon its citizens who have settled in this country with full assurance that they should be protected. I wrote to Government on receipt of telegrams of the disaster at Plum Creek asking immediate and efficient protection. I suppose they will say as they did once before, that the matter is placed in the hands of Gen. Sherman and they dont know of any better way to protect us. I think if you would write a strong letter to Gen. Sherman and the Government setting forth the difficulties of our situation that it would be of a great service to us.

I feel about the engineering question that in running through a broken mountainsous country, we want to run a great many line to fully develop the country and show us the best routes, and to do this we want active, enterprising and competent engineers. It is utterly impossible to get the best line without fully perambulating the country and whenever a favorable opening presents have it surveyed up and whenever practicable running curves, will throw us out of heavy work, I should put them in. One or two years use of the road will pay all the amendment that may be necessary to make it a perfect line.

I hope your health will improve so as to be able to continue your work. Duff is now sick with typhoid fever of a low type; is so that he is confined to his bed.

We have one of Durant's special meetings this week, to see if he cant get some contract that will enable him to again take direction of the road. I think that he will be disappointed. His injunction does not work to suit him. He will soon find that he is no general manager."

1867

On August 13th, Mr. James R. Maxwell, who had had charge of the changes of the line under the direction of Mr. Seymour, wired me from Fort Sanders as follows:

Fort Sanders

"First change of eighty foot grade causes heavy work and poor alignment. Second one impracticable. Last change gives high crossing over Crow Creek but no heavy cuts or fills; all other changes save work. Opened work near stations seventy and 1100. Cannot get a man for escort. Stevenson wont let detachment pass here."

1867

On August 15th, I received another dispatch from James R. Maxwell as follows:

Fort Sanders

"Change between eight, sixty and nine, forty for eighty foot grade impracticable. Change between three eighty and seven thirty c causes heavy work and poor alignment but no rock cutting.

I think that Hurd will adopt the Evans line from eight, sixty to three, fifty; below that he took my changes; he changed the Evans line from eight, sixty, to nine forty and his work cannot be improved, but it will not suit an eighty foot grade and is the controlling pointon that divid- save work on all changes between eleven, and fifteen hundred- from there across Crow Creek lengthening line eighteen hundred feet. Get an eighty foot grade and do not think that

the work is increased. Will send maps and profiles as soon as possible and write in full."

On August 15, 1867, I Sent the following dispatch to
Mr. M. F. Hurd:

Ft. Bridger

"What line are you building on? Maxwell reports 80 ft. grade on east side is impracticable, but change made in Evans line as helping it. O'Neil says new line on west side with 80 ft. grade is best line. How is it? Answer here."

On August 16, 1867, I received the following dispatch from
Mr. S. B. Reed:

Ft. Sanders.

"Have you decided on line over Black Hills? I think 80 ft. grade impracticable."

On the same date, I received the following from Mr. James
A. Evans:

Omaha.

"If eighty is impracticable on east side, better take ole line all way through improving it all you can; this will be better for Company. Reed is on way to Black Hills; will telegraph O'Neil to see him; if he cant will telegraph him at Sanders; re-send it to Carmichael.

I start for Pennsylvania on Monday, will return here as soon as possible. Do you want me to go to New York?"

After recieving these dispatched, I sent the following telegram
to Mr. S. B. Reed at Ft. Bridger:

Ft. Bridger

"The line from what I can learn as best is Evans' line as changed to save work by Maxwell and Hurd. They report 80 ft. grade impracticable on east side of Black Hills; on west side the new line of O'Neils they report best, you are there and can decide better than I can."

On August 21, 1867, I received the following telegram from Mr.
Oliver Ames:

New York

"We have a telegram from Seymour today saying that the grade on eastern slope has so much work done on it that he does not think that any change is practicable to reduce it. I have telegraphed him today that he may examine the western slope and leave his report at Fort Sanders for your examination when you return.

I hope amongst you all that something first rate will be adopted. Dillon is sick out at Morristown and I shall go out there this evening to see him. Bushnell has had ~~an~~ intermittent fever since his return and is now confined to his bed but will be out shortly. Duff still confined to his bed."

I sent the following telegram from Ft. Bridger to Mr. Oliver
Ames:

Ft. Bridger.

"The 80 ft. grade on Black Hills reported impracticable by the engineers and by Mr. Reed. I have instructed Mr. Reed to build on Evans' line as changed by me to run west.

I see no necessity of any further surveys in the Black Hills. Seymour has taken back Maxwell's party that was on way west to commence location. I need that party badly west of us. Wish you would telegraph Seymour that work cannot be delayed for any more surveys."

This was answered on ¹⁸⁶⁷ Aug. 28th as follows:

"I have a telegram from Mr. Seymour today saying that he and Mr.

Blickensderfer have examined eastern slope of Black Hills and find that it will cost by a slight variation of line \$120,000 less on an 80 ft. maximum grade than it will cost on present line, and I have advised him that the change would be accepted if as favorable as reported. He also thinks the western slope may be improved and we have authorized him to make these examinations and report.

If he shall be able to present to us a very much more favorable line, then our duty to our stockholders and the public, and to our reputation as engineers will force us to accept it. I hope your labors at Salt Lake will not be long, and that you will take good care of yourself and not overdo and break down your health. "

It was very evident to me now that for some reason the Board of Directors were not disposed to follow the advice of their engineers but were influenced by Seymour and his continuous telegrams and misrepresentations.

1867

On August 29th, Mr. M. F. Hurd, who had charge of the work on the Black Hills for Mr. Reed wired me as follows:

"Can't get any grades here from the summit west; parties at Dale Creek waiting for work."

I saw very plainly that all delays were going to be laid on me if possible.

1867

On August 31st, I received the following dispatch from Cheyenne from Col. Seymour:

Cheyenne

"Have received orders from President Ames to adopt 80 foot maximum grade on eastern slope of Black Hills, and to examine and report on western slope. I desire your coOperation in this matter and as haste is important must have maps and profiles of present line to work from on both slopes; also Maxwell's party during time necessary, so that work will not be delayed and facilitate maps and profiles for Blickensderfer. Please telegraph necessary authority and instructions immediately. Blickensderfer makes 22 feet difference in levels from summit to Crow Creek."

1867 J. L.

On August 31st, Mr. Williams wrote me as follows:

H. Wayne

"Mr. Ames says he will go out with me in October. I will then ask you to put on a party for two or three weeks or so, to make additional and careful surveys at certain points. The exact location of the M. & M. crossing should be made, sites of lines exactly fixed, &c. The exact location should be made through South Omaha so as to get the right of way and the feasibility and cost of cutting down the summit hereafter, with the grades I propose (different from Evans) tested. Then at Child's crossing I should like to have the curves run through the ridge and the cost of an 800 ft. tunnel estimated. I made this deep cut from the profile much more favorable than you did, but I may be in error. I mention these surveys now knowing that you may be scarce of engineers. Perhaps Mr House or Evans could do it or some new man the board may be sending out. There is another reason for surveys--it will help get the right of way. For this purpose too everything should be kept indefinite until the right of way is obtained on both lines.

To enable you to make proper final locations from Black Hills to Salt Lake, you must have two or three additional engineers more experienced in hilly location and construction than those you have; without this, no chief engineer could be expected to take the responsibility--seeing the line as he can- but once or twice a year. You ought to have two \$5000 engineers. I have stated to the committee earnestly that they should be willing to spend \$20,000 in additional salaries

for the purpose. They seem willing, but don't know where to find them.

I esteem Evans very highly for the work he has been doing for three years past. He is a man of good alignments, but probably has not done much at definite location and construction; however, I may be mistaken. Evans in the future might answer very well for one. The selection is with you. Advise me at what time you will return.

Grant's letter to Johnson and other issues will make him the Union nominee--and elect him."

On September 1, 1867, in answer to Col. Seymour's dispatch,
I wired him as follows: *Salt Lake, Utah*

"I have no maps or profiles with me of Black Hills; they must be at Omaha or Sanders. Maxwell's party must move west. Lambert's party can be used for Black Hills surveys."

On September 1, ¹⁸⁶⁷ from Salt Lake City, I wired Mr. S. B. Reed
as follows: *Salt Lake, Utah.*

"What line are you building on, on east slope of Black Hills? Have you received any orders to build an 80 ft. maximum grade?"

He answered on the same date as follows:

Julesburg
"House cannot make head or tail to O'Neil's change; could not find notes at Sanders. Col. Seymour is working in Black Hills. I have a large force on grading there."

These dispatches show what a fearful mix-up there was in the matter but I saw that it was impossible for me to remedy it where I was, and that I would have to let Mr. Reed work it out the best he could, knowing that his judgment was good and that he would, under the circumstances, do whatever was best.

On September 30, ¹⁸⁶⁷ I received the following letter from Mr. Ames in answer to mine of August 17th: *North Easton, Mass.*

"Your favor of August 17th from Ft. Bridger is received, and am very much pleased with your success in locating route on so excellent a line. Since date of your letter we have had a letter from Seymour stating that he and Blickensderfer had run the eastern slope of Black Hills and had found a line that could be built on an 80 ft. grade with \$120,000 less money to the summit, with a practically good alignment and with no heavy cuts to retard the work; and bringing the heavy grade farther east so the base of the Rocky Mountains will be fixed three miles farther east. This will be certainly the most desirable route, and if so, should be adopted.

Our grading here is going along well but would go much better if Reed was an active, energetic man; but now we are constantly having delays for want of system and application to duty on his part. It will not do for us to keep him another season. We had a letter yesterday from Casement saying the graders were idle for want of location, and that Reed was off at Chicago to purchase some lumber that Miner could have done better on order from Reed. The fact about Reed is he prefers doing anything but his duty. I presume you will find the line he has run anything but well done. He has probably run over the country and made up his report more by guess from a birds-eye view of the country than from any actual levels and critical examinations of the country.

I have had a Mr. Kidder to go out on the line of the road, who is recommended as a first class engineer, and will report for duty in about two weeks. Mr. Carter has known him favorably. I have an application from Mr. N. N. Armstrong, of Erie, Pa. who has held

prominent positions on several roads, desiring to take charge of a survey party. I hope to be able to get some men that will be first-class on the road when you leave for Congress, which will soon be, and you, for at least six or eight months will have to be away and to trust to reports and if we do not have active, working, reliable men these reports cannot be trusted.

I hope you will be able to get a good line to Salt Lake. I suppose it is fixed that the line of Central Pacific Railroad will go on north side of Salt Lake, and if our line will be practicable that way we better make it so. It is of the utmost importance to us to have the Salt Lake business for our road. The Central Pacific are striving to get this side of the lake before we reach it, to secure it; we must prevent it if possible.

I am glad to learn that your health is improving, and trust you will get through safe and find a good line."

On September 6th, ¹⁸⁶⁷ Mr. S. B. Reed wired me as follows:

"Have written Ames about change of location. ^{Julesburg,} Carter has gone to the mountains. I go west Tuesday. There seems to be a disposition to retard the work at the expense of somebodys reputation. What about locating engineer Morgan?"

On September 22, 1867, I received the following from Mr. Evans:

"The folks are still sweating in the Black Hills. ^{Maxwell's Camp} As I came along three separate lines of grading could be distinctly traced in places showing that some of the changes had been changed. It seems they are determined to build the 80 foot line on eastern slope, so that the last line run by O'Neil on western slope will be taken. Considerable ingenuity is being used to avoid Dale Creek crossing and as a consequence Evans' Pass. Alas, for my immortality.

I want you, if you can, to sell me one of the reserved blocks in Cheyenne. I think a little can be made out of it, and if you would as soon I would do it as others and if consistent, let me have it. Hope to see you soon."

After reaching the Black Hills and examining the work, I wrote the following letter to Mr. Ames:

Made no more changes in Black Hills lines. The delay and work done would have graded a better line than we have got to the summit.

All force possible should be put on from summit to Laramie Plains. We can finish the grading if proper effort is made by middle of December. The change at summit is objectionable; makes heavy crossing of Crow Creek. No work done on that change yet."

On October 10, 1867, Mr. Seymour sent a dispatch to Mr. Ames as follows:

"Dale Creek route just surveyed is two miles shorter and has two hundred and thirty-three feet less elevation than Evan's Pass route. Maximum grades one hundred feet in both directions. I think it will cost about two hundred thousand less and take three or four months less time construct. Will report more fully after making further surveys about Evan's Pass and high bridge."

On October 7th, ¹⁸⁶⁷ I received the following letter from Oliver Ames:

"Your letter was duly received from Salt Lake but we have had so much excitement about our annual election and making up a new board of Directors and contract for building road that my whole thought has been given to that. We have now got through that and our new board is made up of the old board, removing from it Tuttle, Dix, Lambard and McCormick, who are in Europe, and substituting for them John B. Alley, Benj. E. Bates, W. T. Glidden and F. Dexter- all of Boston. We had a stormy time of it but are now all harmony and the Doctor agrees to

go along in harmony and for the best interest of the road. The board of directors is made up of nice gentlemen who will look only to the true interest of the road in their action.

Carter has got back, and all of Seymour's wonderful improvements of the line turn out to be of no account, as far as yet reported, except the first change to avoid the high bridge which met your instant approval. The engineering department in your absence to Congress I suppose you will put in the hands of some competent assistant and it occurred to me that if Reed is the man you would like and feel that he is competent in your absence to direct the various parties in your absence, that we might get a man to take his place more easily than one to take yours. Reed has been over the whole ground and, next to yourself probably knows as much about what has been done as any other person. You have to decide this question soon, as your Congressional duties will now take you to Washington where you can for the next eight or ten months have but very little time to look after the Pacific R. R. I make the suggestion of Reed's name that you may have the liberty to choose him if you think he is the best man for the place, but not with any desire to influence your judgment as it is our interest to have you select the best man entirely aloof from outside influence.

The North Platte and Loup Fork Bridges have not yet been changed as proposed; this should be done before winter prevents if practicable. I am proposing, when we get our matters here fixed up, to resign my place as President in favor of McCoombs, who will be able to give more time to it, and is quite desirous of the position."

Mr. Reed
On October 9, 1867 from Julesburg wrote that "col. Seymour seemed determined to delay the work as much as possible. His object, apparently is to injure someone's reputation. General Dodge seems to be the scape-goat. Col. Seymour has been working to get a line with grade of 10 feet less per mile than the present location and he can do it, but the line will not be as good as General Dodge's or as easily operated when built. I have written to New York and given a full statement of the matter and trust the company will be fully posted about the facts in the case. I know they will as far as the delays are caused in changing the line."

1867
On September 22nd, Mr. Reed wrote again:

"Mr. Carter and Col. Seymour are both in the mountains yet. I have not heard from either since my return. Col. Seymour can wind Carter around his finger at will and there is no telling what they will do. The work is being pushed ahead rapidly and I hope to get the grading done before the Col. gets through his surveys. Col. Seymour has succeeded in getting the route changed. The change necessitated a very sharp curve which made it a more expensive route to operate than the one first chosen. After about ninety thousand dollars had been expended on Col. Seymour's route, the committee of the Pacific Railroad Company came out and looked the ground over and decided to discontinue work on Seymour's line and resume work on the old route. When out on the work they asked me why I did not oppose Col. Seymour's change, which has proved so expensive. I quietly told them that they had all the data concerning both routes, with the result of adopting either, and I considered them competent, under the circumstances to decide the matter. I had no authority in the matter, but I thought General Dodge protested against the change."

On October 2, 1867, I sent the following dispatch to Colonel Seymour:

"Suspend all further surveys in the Black Hills. Mr. Lambert's party is needed for other work."

Col. Seymour answered:

"Will you be good enough to inform me at whose instance or by whose authority the above despatch was sent and oblige."

I immediately answered that it was sent by my own authority. It was fortunate that I reached the Black Hills before any work had been commenced on the changes of the line that Seymour had made *on the west side of the Black Hills* because as soon as I examined them, I saw that the changes instead of being what was represented was entirely different and I threw them all out and ordered the work to be commenced on the original Evans' line. When Mr. Reed came to grade the changes made by Seymour on the east side, he had been obliged to connect them with the Evans line and adopt that most of the ^a ~~way~~, while Seymour claimed he had an 80 foot line at less cost than a 90 foot line; when I came to examine it, I found that he had carried the 80 foot line down to within about 1500 feet of the end of the grade, when they had been obliged to get down on the bottom to put in a 90 foot ^{grade} line so that all the work and changes which had been made had been a great injury to the Evans' line, putting in lots of curvature and saving nothing in the way of work and finally came back to his grade; therefore, the road was taken over the hills with a 90 foot ^{maximum} grade.

When this line was built, we found that ~~an~~ engine would haul more cars over the 90 foot grade than over the claimed 80 foot of the Seymour line on account of the greater curvature in the Seymour line.

The Company, as shown in Mr. Ames' last letter, had finally come to the conclusion themselves, that all the changes Seymour had made amounted to nothing. They had sent out Mr. T. J. Carter, the Government Director and an engineer, to examine the lines and it seems he had returned reporting against every one of the changes but it was too late then to go back to the Evans line for Mr. Reed had the grading nearly completed on the East side of the Black Hills, but he had held off doing any work on the West side of the hills until I got there to examine the line, as Mr. Reed was very much opposed to any change on the ~~East~~ side but was absolutely opposed to any change on the West side of the hills.

Mr. Evans took up this question ~~of~~ his changes and made the

following report upon it, which was conclusive as to the superiority of his own line:

"The change is not an entire one for the whole distance, but the stations given above are the extreme points, all changes that have been made occurring between them.

Work was in progress on the line originally located previous to and during the time the changes were being made.

The material moved and rendered as useless expenditure is as follows:

Earth excavation, 34, 593 cubic yards.
Solid rock excavation, 1,020 cubic yards.
Loose rock excavation-----cubic yards.

In making a comparative estimate of both lines, I shall take both profiles, presuming that the classification is the same in either case, making no deduction in either for temporary trestling or bridges, using for embankment a base of 14 feet, slopes $\frac{1}{2}$ to 1, and for excavation a base of 16, slopes 1 to 1 in both cases.

		Cubic Yards.
Original location, embankment470,487
Original location, excavation159,433
		<u>629,820</u>
Line as changed, embankment459,397
Line as changed, excavation175,179
		<u>634,576</u>
Excess on line as built		4,756

Grades compare thus:

Original line, maximum grade, 89.76 feet per mile.

Line as built, maximum grade, 88.176 feet per mile.

Upon examining the comparative alignment of both, you will be able to determine whether the slight difference of grade is not more than compensated for by excessive curvature.

Table Curvature.

Deflection per Sta.	Radius	Original location.	Changed
degree.	11,459 ft.	230 10'	
"	8,594 "	7 22	
1 degree	5,730 "	102 42	25° 50'
2 degrees	2,865 "	215 37	75 24
3 degrees	1,910 "	153 16	293 38
4 degrees	1,432 "	216 27	494 19
5 degrees	1,146 "	112 10	276 52
6 degrees	955 "		52 00
Total deflection		830 44	1,218 03

The total deflection is therefore 50 per cent greater on the changed line than on the original location, and if the above table is scrutinized it will be seen that in curves of short radii, say from three degrees upwards, the increase is fully 130 per cent.

When we consider that, practically, curves are seldom in perfect adjustment, and that trains in grades of 80 and 90 feet are very often under imperfect control, the liability to accidents is very much increased, as well as the wear and tear of the machinery and rolling stock. The line, as changed, is much more liable to obstructions from snow than the original location. It may be an interesting question to investigate, where the compensation is found for the material lost on the first and decidedly the best line; the cost of keeping an engineering party in the field during the entire season, and the still more expensive delay caused by doubts pertinaciously and systematically thrown upon everything that had been done previously by those in charge of the work. I do not hesitate to say that had the original line been pushed through without let or hindrance, the company would be in possession of a far better line, and that their material, instead of being now at Cheyenne,

at the foot of the grade on the eastern slope, might just as well be here at Sanders, and immediately available for the year 1868.

The delay referred to above was not only felt by those connected with the construction, but interfered much with the parties under my charge. They were used in running lines on the western slope, knowing well themselves that they were operating where no man of any engineering sense would ever think of using an instrument.

Notwithstanding the delay, the location was carried to eight miles beyond the Medicine Bow River, sixty miles west of the crossing of the Big Laramie river."

On September 22, 1867, Mr. Evans reported on the survey that had been made from the Big Laramie to the Platte. That the Maxwell line down Pass Creek known as Maxwell Creek was a better line than the Brown line, if it was possible to get a suitable connection from the Platte to the Brown line. This was found impracticable but when the Union Pacific railroad made its reduction in grades and changes, it adopted the Maxwell line about half way down the C reek and then cut through the bluffs to the Brown line ^{on Mary's Creek} utilizing Brown's crossing of the North Platte. We could not take the work that the Union Pacific had taken to cut through from one bluff to another but by doing this they threw out the 60 ft. grade rising the Rattlesnake Hills to the Pass. O'Neil who had been examining the lines from the Laramie River to the Rattlesnake Pass to a connection both with Brown's and Maxwell's lines, reported the line north of Cooper's lake as being the best with not to exceed 45 foot grades. This line had heavy work.

On October 27, 1867, Mr. Hodges wrote me as follows:

Camp 105. Head of Echo U.T.

"I have the honor to report the location of Weber narrows (seven miles) complete. The Lost C reek question "thoroughly exhausted" and two miles of location at this point. A map and profile of Weber narrows and a profile of Lost Creek nearly finished, thus employing the two snowstorms we have already had, but the weather has generally been so fine and the approach of winter so near that I have confined myself to out door work every available moment.

Reports of Lost Creek will embrace about sixty miles of line and four passes within two miles of connection with Mr. Bates' line; that route is impracticable on account of heavy grades without slopes to overcome extraordinary elevations. A pass for the north is made on a 50 ft. grade without tunnel or cut and is just 100 ft. higher than Echo; but to reach its vicinity requires 9 miles of maximum grade, three of which show very expensive work.

Made a reconnoissance of the crest of this range to the northward until I reached water flowing into Cache Valley. Will report on it as soon as further information, written for, is received. Hope to show a better profile and grade here than you expect, but running the series of reversed curves requires much time.

Regret that I have been unable to meet Ives of the C. P. R. R. owing to failure of mails and a change of his programme. He returns Westward after reaching Hawk's Fork via that stream."

On November 6, 1867, Mr. John R. Duff, who had been on the trip with me, on his arrival home, wrote me as follows:

"I have not forgotten my promise to write to you as soon as I got home, but although it is a long time since we parted, I have in reality just reached there. ^{Boston Mass.}

I arrived in Boston with my pony all safe and sound a week ago last Friday, and only remained at home about a day when I started back West again to Rochester to accompany my sister home, who had been waiting there for me nearly a month. My mother, who had never been to Niagara Falls, thinking as I was going so near there concluded to accompany me, and so that has occupied the last week. I got home last night and now I feel as though a short rest would do me good.

I presume by this time you have fully recruited and I trust your health is much better. Father says that you will learn all that you wish to know about the affairs of the U. P. R. R. from Mr. Ames and Mr. Dillon, therefore it will not be necessary for him to write anything about it. Father says the Ames' and the rest conceded more to T.C.D. than he was willing to do, but he was sick and knew nothing of the proceedings at the time. I met T. C. in Chicago and had a long talk with him. He inquired about you and what you had been doing in the Rocky Mountains. Of course, I gave him a most flowery account and spoke in the highest terms of everything I had seen, and he was pleased to say during the conversation that he thought you were the best practical and the best locating engineer he ever knew. Still he may have made the threats that we heard about certain persons being removed if he got the power again; but then I don't believe he will get the power very soon.

I had a letter from Mr. Corwith the other day stating that he arrived safely in Calena, and thought he should come to Boston sometime during November. Gen. Rawlins, I see by the newspapers, arrived in Washington after a six months sojourn in the Rocky Mountains. As to Major Dunn, I do not know whether he has been through her or not on his way down East "(Maine)

My little brother was perfectly delighted with the Indian pony and every afternoon goes out to ride. The Texan saddle that I had made in Omaha attracts considerable notice. I left a "Box of specimens" either in Council Bluffs or your office in Omaha; also a lariat rope and a pair of buck horns. If you see them will you be so kind as to have them taken care of for me until the next time I come out?"

On November 7, 1867, Mr. Johnson Morgan who had been making some changes in Appleton's line over the Divide of the Continent, had been compelled to leave the work on account of the loss of his escort wrote that the weather was very inclement; had been having very severe cold and heavy storms for two weeks; there was a storm of wind and snow raging while he was writing. Said he had succeeded in connecting Brown's line with that of Mr. Appleton west and south of the large Dry Lake east of Clay Buttes. He had found a good line getting down off the summit into the Red Basin with a grade not to exceed 40 feet per mile; that he could not find any depression in the summit in the rim of the basin lower than where Appleton had crossed; that he had explored the country between the west foot of the west summit and the heads of Bitter Creek, some ten miles west of Banell Springs, found good ground over all but about five miles of the route, with an asset

not to exceed 40 feet per mile.

On November 7, 1867, from Ft. Sanders, Mr. Bates reported that he had completed the Medicine Bow survey and connected with Brown's line. This is the line Brown started down the Medicine Bow and abandoned. He said he came up the Medicine Bow Valley all the way with their train, got a very good line and the Medicine Bow has a fall of 1270 feet in nine miles; that there was no difficulty in getting from the mouth of Rock Creek to the end of his line on a grade of from eight to ten feet per mile, with only one crossing of the Medicine Bow; that the great objection to the line was the frequent crossing of the streams.

The trouble with this line was that west of the Medicine Bow, there was no feasible route to connect with the Brown Line.

On November 12, 1867, Mr. Dillon came West to examine the work, but I had left and was in Washington.

On November, 18, ¹⁸⁶⁷ from New York, I sent Mr. House copy of the contract for the building of the railroad from the 100th meridian West giving full instructions in the following letter as to the estimates:

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"Under the new contract from 100th meridian west we must get the actual cost of each station house, tank, round house, machine shop, machinery, turn table and all other buildings put up by the contractors; buildings built by the company after road went into our hands are not to be included. Get each separately and send me as soon as possible. It will form the basis on which to make estimates in future and you need not return any more estimates on old plan. Get time schedules from Snyder of road to Cheyenne and send me; also send me the proportionate estimate based on 50,000 per mile of Henry's; it is in my desk; also our proportionate estimate on same.

You will construct a proportionate estimate, dividing proper parts as for grading, bridging, tying, track-laying, telegraph equipment which is to be in cash cost \$7500 per mile for following distances and prices--commencing at 100th meridian and going west.

1st.	100 miles	at rate of	\$42,000	per mile.
2nd.	167	" " " "	45,000	" "
3rd.	100	" " " "	96,000	" "
4th.	100	" " " "	80,000	" "
5th.	100	" " " "	90,000	" "
6th.	100	" " " "	96,000	" "

The proportionate changes, &c. e., grading would increase over Black Hills and decrease again in Laramie Plains, increase again over main divide and into the Black Fork, &c.

Morgan, I learn is enroute in. I wrote to Davis of the work to be done on land matters, and I want the land map painted up and forwarded as soon as practicable, and the R. R. line and stations put more prominently on it. I left you an order of instructions about getting final estimate on road as far as constructed with actual cost as nearly as practicable; this is entirely independent of

Send me that rough tracing of map on P. O. paper that Appleton sent in to me. Did Hudnutt get my letter?

These prices were payable in ~~securities~~ ^{not} in cash.

On November 19, 1867, Mr. Evans wrote me again in relation to the lines East of the North Platte. He says:

"It appears that Maxwell's line is best east of Platte to the Rattlesnake Divide and Brown's west of that River, including the crossing of the Platte itself. Now the most desirable thing is to connect these two lines so as to connect the good points of both. I am of the opinion that we can connect on the western slope of the Rattlesnake Hills-thereby availing ourselves of the lower altitude of Maxwell's summit and at the same time maintaining as a point in the line Brown's Crossing of the North Platte River."

From my examination of the line, I was satisfied that this could not be done; that the Maxwell line would have to connect with Brown's line west of the North Platte; which, after surveying the next year, was confirmed.

On November 19, 1867, I received the following letter from Mr. House in relation to the work on the completed line as follows:

"Your letters of the 16th from New York came to hand this morning. The draft of \$10,000 I placed to your Cr. in the First National. I have commenced the map of the 6th hundred and will send it to you as soon as completed. Mr. Blickensderfer left this morning which released Mr. Lambert from further work for him for the present. I am in hopes now to soon get the most of the office work done up."

The meandering of the river is completed and am now platting the notes; will transfer them on the river map and then make the changes on your map and send it to you.

The masonry of Loup Fork is progressing finely with very prospect now of completing before extreme cold weather sets in. I have made three different plans and estimates on the cost of repairing North Platte Bridge; one as you designed, another as Mr. Dillon and the other as my plan. They stand respectively as regards cost, your \$12,00, Dillon's \$10,000 and the last at \$25,000, which includes new superstructure throughout. I will send you a tracing and estimate of each in a few days. The Doctor and Mr. Dillon have examined them but as yet have adopted neither. Tomorrow I am to make an examination and estimate for a temporary pike bridge across the Missouri River.

Mr. Dillon starts for New York tomorrow. I do not know whether the Doctor will go or not. Our track reached Cheyenne last Thursday. I have not been up but will try and get away on Thursday of this week. I received last week another remittance from Talfey amounting to about \$5,000. Morgan arrived here with his party Saturday morning. He has disbanded the most of them; the balance go back to Sanders to work up the notes of survey."

Our track reached Cheyenne on the 17th of November. ¹⁸⁶⁷ During the summer, while I was absent, their had been changes made against Snyder's operation of the road, mostly by discharged conductors and brakeman and on November 23rd, Mr. Snyder wrote me:

Omaha, Neb.

"All that I ask of the company is that they will probe this matter thoroughly; look through every transaction that has taken place and satisfy themselves from the records in the office or testimony of reliable men whether I have been working for my employers or myself. If they can find that I have ever made one dime outside of my salary I want them to discharge me. If they find that I have worked for their interests solely and have never engaged in any transactions that my position could affect directly or indirectly it is simply asking justice to have them sustain me."

I investigated these charges and found there was nothing to them and reported to the company accordingly and Mr. Snyder was sustained.

On November 25, 1867, from Bridger, I received the following letter from Mr. F. S. Hodges, on his work over the rim of the Utah Basin:

"My reconnoissances of rim of basin now comprise its entire eastern crest from Sulphur Creek northward to fifteen miles above Smith's Fork (mouth of). The lines which have been run show the only good routes. That which Mr. Reed abandoned appears to be in as favorable a locality as any from two miles north of Quaking Asp to my line of last summer. It is my opinion that there is no other except with long tunnels and maximum grades. The remaining map and reports will be forwarded at the earliest moment.

It is due the California engineers to state that they first discovered the Echo route upon which I have located. Their stakes being placed 500 ft. apart, I stumbled over them while reconnoitering the route. Their line was run to 116 ft. grade and shows some heavy work. Final location will somewhat change, it may be, my line as my report will state. East of the summit it is located with much care; west of it we contended with eighteen inches of snow for a day or two. The desired information about my late reconnoissance of Wahsatch is not yet received.

I start today to reconnoitre on horseback the route down Hains Fork. My party moves to Green River to comply with instructions there. On account of an accident to my transit, I cannot run in curves, but will approach location as near as possible. As soon as this is finished, I shall send the party back to Salt Lake for discharge, proceeding myself to Omaha where I can have reference to my notes, without which it is impracticable to write report of Bear River line.

There are also "other considerations of the highest character both official and personal for reporting at Omaha."

The reports I received on the lines East of the ^{North} Platte were not satisfactory and I instructed Evans to have O'Neill and Maxwell, notwithstanding the inclemency of the weather, to re-examine this country, which was done.

On November 29, 1867, the track was completed to the 526 mile post. Mr. House who went over the road, reported that the condition of the road was good as far as Sidney but from there on, there was no provision made as yet for enclosing the tanks and that the trains going west were very much delayed as everything was frozen up.

On November 30, 1867, the President fixed the East base of the Black Hills at the point designated by Mr. Blickensderfer, being the commencement of the 90 foot grade, rising the East slope of the Black Hills, which was a point about five miles west of Cheyenne.

On December 10, 1867, I received a letter from Mr. James A. Evans from Ft. Sanders in which he said Maxwell's and O'Neill's parties were weather bound. The location made by O'Neill to the Medicine Bow and from the Medicine Bow to summit of Brown's Pass was finished. He was holding Maxwell and O'Neill hoping the weather would change, but winter commenced in earnest one week since; it had been stormy since and was then snowing. Indications are rather unpromising, still he thought after this stormy time they would have some good weather and by ^{when the sun shines} making hay, ^{would} with they ^{be} able to finish. He was particularly desirous to make connection from the Maxwell line to Brown's. Mr. Evans also wrote with reference to the next season's work: "I have this to say that aside from yourself, I am fast losing respect for all in high position on the U. P. R. R. The last development is, that because I was honestly and legitimately making a little in my tie contract, they must needs go back and curtail it one half, giving it to two parties who I verily believe steal more from them annually than I shall make in a proper way from my little contract. It seems to me now that this country is to be my future home for all time whether connected with the R. R. or otherwise and for the next season if compensation can be made to warrant my devoting my whole time to engineering, I will take charge under you of the work to Green River or to Salt Lake, if you wish it."

On December 2nd, ¹⁸⁶⁷ the Commissioners accepted the road from the 490th mile post to the 510th.

In order to facilitate the crossing of our material over the Missouri River during the winter, I concluded as soon as the river froze over to put in a pile bridge, using the support of the ice to hold the bridge in place and in December I sent orders to have this done. It was thought it would be impossible for us to

maintain a bridge over the river during the winter but I put it in with cottonwood piles ^{and the Bridge was} strong and substantial and crossed all our material as it came over the Northwestern road on to the west side of the Missouri and that enabled us to pile it up at the end of the track at Cheyenne. When the ice went out in the spring, we simply took the rails, ties, caps and stringers off and let the piling go out with the ice. This was the first bridge of any kind ever built over the Missouri River.

On December 4, 1867, Mr. Evans wrote me that himself, Maxwell and O'Neill left for Rattlesnake Hills, taking hay and forage with them that they might settle the question east of ^{North} Platte River. The winter has fairly set in and very little work could be done; one heavy snow would close up everything.²

We laid out the town of Laramie near Ft. Sanders and were having considerable trouble to maintain it. Mr. Evans asked me to obtain authority from General Grant or Sherman to have it protected. This was done.

Congress had commenced talking about the freight tariffs over the completed road of the Union Pacific and on December 10th, ¹⁸⁶⁷ Mr. H. M. Hoxie wrote me as follows:

Omaha, Neb.

"When Congress know how much it cost to build this road, they will hardly meddle with the freight tariff, I think. The fact that the fuel for the entire road has to be brought from Missouri and Iowa and don't cost less than \$30 to \$35 per ton on an average and much more west of Julesburg, seems to me will refute all their arguments.

Track is done about 15 miles west of Cheyenne. I think Reed won't reach the summit. No water is the trouble and he is the one at fault."

1867

On December 11th, I received a letter from Mr. Evans in which he said:

Ft. Sanders

"There is no possible way of connecting the two lines of Maxwell and Brown on the western slope without such an undulation as would increase the total elevation at the same time increasing distance very much.

It seems to me now that east of the Platte there is no question but that Brown's line is the one for us to take. The track is now within 5 miles of Carmichaels. It may be that they will succeed in getting 20 miles of mountain work."

1867

On December 12th, he sent me the following comparison of the lines from the Maxwell summit and the Brown summit to Bitter Creek:

Ft. Sanders

"A comparison of lines into the valley of Bitter Creek starting from our crossing of Medicine Bow River will show the

Maxwell pushed
first bridge!

following characteristics: They may be considered as three distinct lines.

1st. By Medicine Bow valley, crossing Platte near mouth of that stream.

2nd. Maxwell's summit, crossing Platte at nearly same point.

3rd. By Brown's summit, crossing Platte about 5 miles below mouth of Pass Creek. We will suppose that No. 1 and 2 come into the Brown and Appleton line at the most available point.

Distance. No. 1---154.5 miles.

No. 2---159.75 "

No. 3---139.8 "

Elevation No. 1 ---1532 ft. Depression 1296 ft.

No. 2 ---1880 " A 1664

No. 3 ---2060 " " 1824 "

Maximum Grade 1----85 ft.

2----86 2

3----65 "

It will be seen that the shortest line has the lowest maximum grades and the greatest amount of elevation and depression. The line by way of Medicine Bow valley has the least amount of undulation, is nearly 15 miles longer and much the worst profile as well as the greatest difficulty of construction and the worst alignment. The shortest line shows the best all things considered."

This settled the question in my mind and was in accordance with my own views. It was the line I ordered located.

On December 13th, ¹⁸⁶⁷ Mr. Snyder wrote to me in relation to his department as follow: *Cheyenne, Wyo.*

"Your favors 1st and 7th inst. reached me herethis morning. I propose to remain until everything is in shape.

Track to Col. Carlin's quarters, Ft. D. A. Russell, is completed. We are delivering them now about forty cars daily. Every pound (some 4,500.000) of their friehgt has been moved from Julesburg besides 7 large warehouses and we are shipping for them now from 100 to 150 tons daily from Omaha. We can close up their entire shipments in one week. There was some delay a couple of weeks since in the movement of all freight and construction material, owing to the scarcity of water and freezing of pumps when tanks were not enclosed, but weather is fine now; have had wells deepened and anticipate no more delays.

I am having 6 large snow plows constructed and 24 smaller ones. Will soon have them distributed at each engine house ready for work. As soon as I can get depots, tank houses, section houses and coal sheds completed, I will put up some snow fences at this end of the road. Am working now every carpenter I can get to enclose our buildings. Reed dont keep up with his work; tanks not enclosed, cuss and embankments not in sha pe to run trains safely; not a bridge between Sidney and Cheyenne that ought pass muster. I have to go over every foot of the work but dont like to write New York about it fearing they will consider me a habitual growler.

I will track will be laid, if weather permits, to point 20 miles west of Crow Creek. Then I am informed it must stop as grading cannot be gotten out of the way. Track is now about 12 miles west off Crow Creek.

Gen. Casement has started for Washington. He had several closet interviews with Dean before leaving. As I made him pay us some \$33,000 for freight that he expected to get free, the General is not one of my warmest friends. Next year the party laying track and all other contractors ought to be obliged to pay tariff rates on their freight; this would prevent a pepetition of this years swindling--there has been plenty of it, I assure you.

Wells Fargo & Co., who had the contract for transportation of freight west of road, got an increasing scale of prices monthly after August, and their freight was not crowded upon them. Had they taken from Julesburg or Hills Dale as fast as they could, there would have

been no difficulty. They wanted December prices, and Myers and his agents have always been easy with them. With the exception of about 10 days, when we could not get a supply of water and immediately after opening to this place, there has never been any delay in moving U. S. Freight. We urged Myers to let us whip when they were moving forward very little. Pike is the master of ceremonies--but has been absent several days. Track is not as far west as it ought; he and fair weather cant be counted on much longer."

On December 17, 1867, I received the following communication from Mr. O. F. Davis, in charge of the land department of the road, showing the progress we had made during the season:

"I have had another list of the lands prepared. We now have three lists; one for entry at Land Office, one to retain there, and one to transmit with copy of land map of 1st 100 miles--and are now appraising the lands in accordance with your suggestion. The greater part of these lands must, in my opinion, be appraised at \$2.50 per acres though they will soon be worth more as the Government has so much land adjoining that will be offered at that price or a little less by using land warrants. The list of land with appraised value will be ready to transmit in a very few days when the tracing of the land map is completed with the lands of the Company shaded, &c. Omaha, Neb.

I visited the Land Department of the Ills. Cent. R. R. and of Cedar Rapids & Mo. R. R., presented your letters, was very kindly received and every attention shown me. The system of the C. R. & Mo. R. R. is not yet perfected as they have not yet obtained a title, I think, to all their lands, besides have recently been burned out, losing blanks, maps, &c., but in so far as they have gone I think their system is an improvement to that of the Ill. Cent.; many of the details being much more simple. I presume we might, as experience or judgment would dictate, improve on either of the above mentioned systems.

Our township plats, prepared at the Surveyor General's Office are superior to any I saw, and I am having them mounted on cloth--much needed as I saw from the condition of those used by Ill. Cent.-- then they can be bound. I send herewith sample of blanks used by the Ill. Cent as a tract book, being bound with the township plat, a sufficient number of them to contain all the lands in the township, this with the plat makes a complete record, corresponding to the plat and tract books of a Government Land Office. I would recommend something similar for our use, and in getting up the blanks would almost wish to consult the C.C. & Mo. R.R. land Office again, as they have similar blanks to prepare and have used so much good judgment and skill in preparing their blanks thus far. This tract book with the plats are, in my opinion, the most important records to be prepared, and I should like to have them as complete as possible.

You mention the copying of the field notes from the Surveyor General's Office. I presume you refer to the descriptive lists which are found in the Land Offices. To transcribe the field notes in full would be a tedious and expensive job, but a copy of the descriptive lists would take but a short time and would probably be all that we would require. The plats show the streams, bluffs, timber, marsh or swamp land &c. The descriptive lists give the soil, its quality-- on every line-- also whether rolling or level and whether past in mound or stone &c. Copies of the descriptive lists could be bound with the plats and tract books and would make it all very complete, more so than anything I saw at Chicago.

As the lands are not to be entered before spring, I am anxious to have the necessary proceedings had to cancel all homesteads on the R. R. lands before that time so that all the lands claimed by the Company can be entered at once. It will take some little time and trouble to look up these homesteads and cancel them."

On December 26, 1867, Mr. O. F. Davis sent me a letter enclosing maps of our lands to be filed in the Interior Department:

"I send you today by U. S. Express a tracing of our land map with the lands of the Company colored. The ten and twenty mile limits are also shown by a light shading of India ink; the tracing is not joined together, as it could be forwarded more easily before joining. The map is for the first one hundred miles, which goes nearly or quite to the west boundary of range one west.

I send with the tracing a list of the railroad lands as selected for entry, with the appraised value of each tract as nearly or correctly as I could make it without a careful examination of the lands. The appraisement of the lands near the railroad is based upon actual sales. On the more distant lands where the appraised value is \$2.50 per acre, many of the lands are worth more and would in a very short time command a higher price, but so long as Government lands adjoining can be had for that price, I do not see as we can appraise them higher.

The figures in pencil on the list are the Land Office fees as we estimate them, and are probably not far from the actual amount. We have two complete lists of the railroad lands here; one for entry at the Land Office and one to retain here. We are preparing a list of homesteads on the railroad lands; will proceed very soon to contest them as instructed in your letter of 23d inst.

I will also attend immediately to the getting up of the tract books, also of the copying of the descriptive lists, &c., and all steps necessary to bring the land into market in the spring."

The track for the year 1867 ended about 26 miles west of Cheyenne and on January 1, 1868, I made my report of the year's work as follows:

Dear Sir:- I have the honor to submit herewith the report of the engineering land and lot departments of the Union Pacific Railroad Company for the year 1867, including the reports of Division Engineers, chiefs of parties and geological assistants.

During the winter of 1866-7, Mr. Bates' party was ordered to examine the outlet from the head of Salt Lake Valley to Snake river, by way of Malade river and Marsh valley, with the design of obtaining some knowledge of the rim of the basin. They examined the Malade river route sufficiently to determine its impracticability. They were snowed in a portion of the time, and were finally driven out of the Malade Valley by the continuous storms and deep snows. Early in January, 1867, I sent orders to Mr. Bates, at Salt Lake to organize a party with Mr. Hodges as chief, to run a line from the point where Bear river debouches into the valley of Salt Lake, around the northern point of the Wahsatch range, connecting with Mr. Reed's line in the valley of Black's Fork. Full descriptions of the surveys are given in the reports of Messrs. Bates and Hodges, and I will notice them more fully when I come to my personal examinations of the country.

In making the general organization for the surveys in 1867, the pressing work was--

1st. The revision of the location up the Lodge Pole and on the divide to the eastern base of the Rocky Mountains. To this work was assigned Mr. L. L. Hills, who, before completing, was attacked by a band of hostile Indians, and killed, some six miles east of Cheyenne.

2d. The final location of the line over the Black Hills to Fort Sanders. A party under Mr. Evans had been kept at work in the Black Hills all winter, settling upon the line to locate, observing the fall of snow, the streams, winds &c. Mr. Evans pressed the location early in the spring, the company not giving me over two months to complete it. The location was completed, and, in my opinion was far superior to the changes since made in the line.

3d. The development of the country from Fort Sanders to Green River. This work was placed in charge of Percy F. Brown, under the supervision of Mr. Evans, with full instructions to develop the

country between the Medicine Bow mountains and Bitter creek on the south, and the Black Hills, Sweetwater, and Big Sandy on the North. Mr. Browne had progressed well with his work up to July 23d, when he was attacked by a band of nearly 300 hostile Indians, some fifteen miles north of Laclede station, on Bitter Creek, and after fighting successfully from 12 o'clock until dark, he was shot through the body and mortally wounded. The balance of the party were forced to abandon their stock after Browne fell, and seek safety on Bitter Creek. Mr. Brown's party had been attacked twice before--once near Rock Creek, when he lost one of his best men, Mr. Clarke, one of the easocrt and had others wounded. The loss of those chiefs of parties was very detrimental to our work, and it required great energy to overcome the natural fears and reluctance of parties to push out into that hostile Indian country

4th. The development of the country between Green river and Salt Lake Valley, reaching north to Snake river; also a revision of Mr. Reed's line, if it was found the most practicable for location. To this work, Mr. Bates was assigned, with two parties, Mr. Hodge's and his own. The loss of Mr. Hills and Mr. Browne forced me to take Mr. Bates and his party east of the Green river, to enable me fully to develop the country between Green River and Fort Sanders. This was a country comparatively unknown, but what little knowledge I had of it convinced me that through some portions of it, north of the stage road, and away from the foot-hills that border the great range of mountains reaching from the head of the Cache la Poudre to Echo Canon, known as the Laramie, Medicine Bow, Elk, Sage Creek, Bridger's Pass and Uinta ranges, we should seek a route for our road. A full examination of this country proved that my view of it was correct. The parties got into the field early, with pretty strong escorts, and were progressing remarkably well with their work, when the combined attacks of the Indians, apparently along our whole line, not only on the parties far west, but on our graders &c., the killing of our chiefs, the depletion of our escorts &c. virtually broke up our work, forced me to change my orders, and to use the parties wherever we could do so to advantage.

Upon the killing of Mr. Hills, I left Omaha, with a view of taking direct charge of the parties in the field, to examine personally the line, and such portions of the country as I had never before gone over. I left the end of the track, at Julesburg, the 28th of June, accompanied by Mr. Blickensderfer, jr., who had been assigned by the President to the duty of determining the eastern base of the Rocky Mountains, under section 20 of the act of Congress of 1862, giving subsidy for building the Union Pacific railroad and its branches; also By General J. A. Rawlins, Chief of staff of the United States army; Major Dunn, aide-de-camp; John R. Duff; General Myers, chief quartermaster department of the Platte; Mr. Rogers, Mr. John E. Corwith and Colonel S. Seymour, consulting engineer, who was accompanying under the direction of the company, Mr. Blickensderfer, in his examination; also Mr. S. B. Reed, superintendent of construction. General J. T. Casement and J. T. Carter, government directors, with one or two of my own assistants, going out to replace the men killed; and Mr. J. A. Evans, division engineer. Most of the party were taking advantage of the escorts that had been provided for me to get safely through the country. I pushed out by rapid marches up the Lodge Pole Creek valley, examining the line, and entered Crow Creek valley, pitching our camp at the (now) city of Cheyenne.

Here I immediately combined O'Neill's and Maxwell's parties, under Mr. Evans, who pushed forward the location from Pine Bluffs to Crow Creek crossing, the work having been abandoned and the parties driven out on the death of Mr. Hills. This was a difficult location to make, as I required that we should in no grade exceed thirty-five feet to the mile, desiring to make that the ruling grade from the Missouri river to the eastern base of the mountains. After running several lines we settled on the southerly line, entering Crow Creek valley some seven miles east of Cheyenne, following to that place, and connecting with Evans' located line over the Black Hills at the city of Cheyenne. On the completion of this location I moved west over the Black Hills, leaving Mr. Maxwell's and Mr. O'Neill's parties in the Black Hills to make some surveys desired by Colonel Seymour and pushed on to Fort Sanders. Reorganizing our parties and escorts

here, I left this portion of the work in charge of J. A. Evans, Division Engineer, while I pushed on to Messrs. Brown's and Bates' parties. Soon after leaving, the sudden death of Mr. Evans' wife called him east, and deprived me of his valuable services. At Fort Sanders we entered the

Laramie Plains

The formation of these plains, which I treat as embracing the country between the western base of the Black Hills and the North Fork of the Platte river, on Rattlesnake range of mountains, is a singular one. They are really a park, similar in formation to the Middle and North Parks, but much less elevated, the level of the plains being about 6500 feet above the sea. On the east and north they are bordered by the Black Hills ranges of the Rocky Mountains, which stretch, about due north, 150 miles to the Laramie Peak, where they turn almost due west, and terminate in the Seminoe mountains, a prominent peak rising at the mouth of the Sweetwater, which comes in to the North Platte from the west, and is really the West Fork of the Platte, the North Fork of the Platte river coming in from due south. On the south they are bordered by the main range of the Rocky Mountains, snow-capped the year round, and reaching an elevation of from 10,000 to 17,000 feet above the level of the sea. Timber covers these slopes to 8000 or 9000 feet above the sea, and then gives way to continual snow, which never, to my knowledge, has left them bare. In this range, we have the prominent peaks at the heads of the Little and Big Laramie Rivers, which border the North Fork, the most noticeable of which are in the Medicine Bow mountains, Elk mountain, Sheep's head, and the peaks south of North Fork Platte crossing. On the west the Rattlesnake range juts out from Elk mountain, and runs about north to the North Platte crossing, reaching only 8000 feet in height. The North Platte canons through the western range in latitude $41^{\circ} 56'$ while the Medicine Bow cuts the eastern range at right angles, really separating that range from the foot-slopes of the northerly range of the Black Hills.

Through these plains run the Big and Little Laramie rivers, which rise in the mountains bordering the southern rim of the plains, canon through the Black Hills just north of Laramie peak, and enter the North Platte near Fort Laramie; Rock Creek which rises just east of Medicine Bow peak, flows due north to latitude 42° then west, into the Medicine Bow; and the Medicine Bow, which rises in the peaks of that name, flows due north to latitude 42° then westerly, canons through the eastern range of Rattlesnake Hills, and enters the North Fork of the Platte river 150 miles northwest of Fort Sanders, in latitude $42^{\circ} 3'$. Except in the mountain slopes to the north and south of these plains, no timber exists of any importance. The plains are covered with a growth of bunch and buffalo grass, and, as you get away from the foot-hills of the mountain ranges, you find numerous lakes, the most important being Cooper's Lake, two or three miles long to one wide, strongly impregnated with alkali, the borders of which are impassable at most seasons of the year, destitute of vegetation and overgrown with sage brush and greasewood.

From this description of the country, it is plain to be seen that our line is necessarily confined between the range of mountain on the south and the foot-hills of the Black Hills on the north.

The indications of snow and the lack of water in parts of this country caused me to seek the lowest elevation on the plains, and cling as closely as possible to the water-courses, by following the Laramie, Rock creek, and perhaps the Medicine Bow, to obtain a line away from the high mountains, unexposed to drift snow that would be adjacent to water, and enter the coal-fields near Rock Creek. The lack of fuel indicated that we should follow the valley of that creek upon reaching it, in order to avail ourselves of that great formation and supply ourselves with fuel. Orders were accordingly sent to Mr. O'Neill, as soon as he finished the location to the mouth of the Little Laramie, to run the lines above indicated.

From the Medicine Bow crossing Mr. Brown had run two lines--

one down the Medicine Bow valley, which indicated the most desirable route, as it avoided crossing the Rattlesnake Hills, but which, for reasons that will appear hereafter, he abandoned, and found a line reaching from the summit of the eastern range of the Rattlesnake Hills, about $8\frac{1}{2}$ miles north of Fort Halleck, in latitude $41^{\circ} 50'$ at an elevation of 7124 feet above the sea and 555 feet above Medicine Bow, which pass has since been named Brown's pass, and is now known as such. From this summit to the North Fork of the Platte he followed down Mary's Creek, which canons through the west range of the Rattlesnake Hills and reaches the North Platte five miles north of the mouth of Pass Creek, in latitude $41^{\circ} 46'$. I was satisfied, from my examination, that Browne's line could be reduced to a grade not to exceed 60 to 75 feet between the Medicine Bow and the North Fork of the Platte, and this made us more anxious that O'Neill's surveys might prove a success.

We laid at the North Fork of the Platte two or three days, in which time I gave the country a pretty thorough examination, following the Platte to the point where it canons through the west range of the Rattlesnake Hills, and determining, in my own mind, that Mr. Brown had got the only outlet to the North Platte from the mouth of Rock Creek to this canon on the south, Mary's creek being the only creek heading in the eastern range of the Rattlesnake Hills and flowing westerly to the Platte within these limits. I also examined the approach to Brown's line from the northwest, thinking that Bates might be forced finally to connect at some point near Brown's crossing, instead of making his connection further west, near the divide of the continent. Subsequently, from letters written to me by Mr. Blickensderfer, who crossed the Platte near the mouth of the Medicine Bow river on his return, I ordered Maxwell to run a line down Martha's Creek, entering the Platte north of the Rattlesnake canon, in latitude about 42° . I also ordered Mr. Bates to run a line all the way down the Medicine Bow Valley to its junction with the North Fork of the Platte.

Maxwell's line was, for most of the distance, far superior to Brown's, having a lower summit to cross, and with lighter grades; but the crossing of the west range of the Rattlesnake Hills was so objectionable that, on my return trip, after personal examination of the lines and surveys, I became satisfied that Browne had examined this country fully, and had not pushed his surveys in that direction for the same reason that I was obliged to abandon the lines run by Maxwell and Bates. The death of Browne before I could reach his party, with the loss of notes and all the information he had obtained in a thorough reconnoissances of that entire country, added greatly to our labors, and in many cases forced us to cover the same ground twice.

At the North Fork of the Platte, Mr. Appleton joined me. He had had charge of Mr. Browne's party since his death. The party was some 40 miles west, unable to go forward for want of water, with their horses gone, their escorts used up, and apparently with no alternative but to back out of the country that Browne was killed in while endeavoring to get a line through. They were, however, in good spirits, and I had no doubt could soon be put on their feet again.

After giving the country north and south such examination as I desired, and after sending orders to O'Neill, Maxwell and Hodges, I determined to push west to Brown's party, and endeavor to reach Mr. Bates, and with their two parties develop the

Bitter Creek Plains.

These plains are bounded on the east by the North Fork of the Platte and the Rattlesnake Mountains; on the north by the Seminoe Mountains, the Ice Gap range, and the Sweetwater Hills, all of which border the Sweetwater, which runs to the foot of the northerly slope; on the west, by Green River; on the south, by the main chain of the Rocky Mountains, the Bridger's Pass range, the Bitter Creek range, the Black Butte, &c. Running diagonally through these plains, from south east to northwest, is the main divide of the continent, depressed here and losing its mountainous appearance, in altitude some 7000 feet above the level of the sea. It is a singular formation, stretching as it does for 100 miles from Bridger's pass, on the south, to the southeast point of the Wind River mountains, on the north, a high rolling prairie or plateau, destitute of water and limited in vegetation. This entire plain, 200 miles east and west, and from 40 to 100 miles

north and south, has no living streams traversing it, and but few living springs throughout its entire extent. It is bordered on the east by the North Fork of the Platte; on the south, by Sage Creek, and Bitter creek; on the west, by Green river; and on the north by the sweetwater; surrounded by living rivers, yet within its limits there rise no tributaries to any of these streams, which flow the year round, and in August, when I crossed it, we travelled days and nights without water except what we hauled with us.

Another singular fact connected with the formation of this great plain is that it is composed of a succession of independent basins, each having its own drainage, which is concentrated at its greatest depression in ponds and lakes, that, in some portions of the year, become quite large, but generally, during the dry season, evaporate and become dry. These secondary basins are from 50 to 100 feet below the level of the surrounding country until the main divide is reached. and then we enter the great basin formed right in the centre of the main divide, known as Reed's basin, or Dodge's basin; its extent being about 25 to 30 miles north and south and from 10 to 20 east and west. When I crossed this basin it was dry, the bed or lowest depression it it being about 500 feet below the surrounding country. It was a surprise to us, as we expected, on reaching the main divide of the continent to strike tributaries of the Bitter creek, or Green river, and there obtain a continual ascending grade from the Platte going west, until the summit was reached, and then a continual descending grade until Green River was reached. After examining the country in the vicinity of the North Fork of the Platte, I determined to push west in about latitude $41^{\circ} 50'$ to $56'$ along the line run by Mr. Brown to the summit, and then endeavor to find an outlet in the west that was feasible for our purposes, flanking the Sage Creek range of mountains by the north and Duff's Peak, Red Butte, and other isolated mountains in these plains on the south. We succeeded in obtaining a good country to Separation Creek. This creek rises in the Bridger's Pass range, flows north and loses itself in the broad plain or depression on the north border of the Bitter Creek plains. This depression is so marked and distinct that it becomes prominent feature of the formation.

The main valley of these depressions rises near the South Pass butte, and extends east along the southern foot-slopes of the Sweetwater Hills, Ice Gap, and Seminoe mountains, narrows down and its drainage runs to a basin near Red Butte point, in about latitude $42^{\circ} 3'$.

At Separation creek Mr. Blickensderfer, jr., and his party left me, with the intention of going east along the foot-slopes of the Black Hills and north of the Medicine Bow river. I informed them that it was impracticable for them to do it with the train, having pushed through the country years before. They, however, obtained a good route east by taking the Sandy Gap, or Fremont's cart pass of 1849, when he came down the Medicine Bow with his carts, and worked over into the Sweetwater valley by the Seminoe Gap. The morning that we parted, I, accompanied now by General Rawlins; Major Dunn, his aid-de-camp; Mr. Duff; Mr. Corwith, my geologist, Mr. Van Lennep, and Mr. Appleton, chief of Brown's party (after giving Appleton's party instructions to work back to the Platte and review a part of their line run, and to seek an outlet to the north towards Seminoe mountains, as I had determined to push Bates's party, when I met them, through into the upper north valley,) struck west, to seek water and a crossing of the divide further north, taking the old Cherokee trail. I followed this trail to the summit, finding water in lakes and a country that would afford a good line. I reached the divide of the continent in about latitude 42° . Pushing over into the Red basin I soon found that we were at fault in all our hitherto formed opinions of the country, and were really descending into a basin instead of the waters of Green river. In this basin I met Mr. Bates and his party, who had got into the basin, got out of water (had been out for three days) and had been forced to retire with his party to the last water on his line. A portion of his party and escort had come very near dying from the use of stagnant or poisonous water from one of the lakes in Red Desert basin. He had with him a reconnoitering party hauling water for his men with their teams, and had calculated and was running a due line from the end of his line to Brown's line, at the divide of the continent, endeavoring to develop the country, and if possible find water, so that he could get his line over it. Upon meeting him and comparing notes of the north and west

formation of the plains, I soon comprehended the make of the country, changed his orders, instructed him to abandon his present line and seek an outlet to the Platte further north, get into the broad valley that I have described above as skirting the foot-slopes of the Sweetwater mountains and endeavor to obtain a feasible line from the mouth of the Big Sandy to Red Butte point, which would keep him in the vicinity of the 42d parallel of latitude, and with the lateral line that I ordered run, and the southern line being examined by Brown's party, would effectually develop these plains, bring out their prominent features, and discover to us the true line across them; determining then, on my return to give the northern portion as thorough an examination as I had the southern. Leaving Mr. Bates there, I pushed out, at 12 o'clock at night for water. Taking a westerly course by night, with Pilot Peak for my landmark in the day, we endeavored to find an outlet over the western rim of Red basin that would lead us to Bitter Creek, as I saw plainly that it was all-important to cross these plains on the shortest possible route that would carry our line from running water to running water. Following the Cheorkee trail, we soon got entangled among the cliffs and precipices at the head of the middle fork of Bitter Creek, and worked our way as well as we could into Bitter Creek valley, striking it at Point of Rocks. This examination satisfied us that to obtain a practicable line into Bitter creek valley or to Green River by this outlet, we must turn out of Red Basin further east, and before encountering the rough, impassable country bordering the heads of the middle and north forks of Bitter creek. The divide or high land at the head of these streams really forms the west rim of Red Basin. I accordingly started Mr. Appleton back up Bitter creek with his small escort, with instructions to find an approach from Bitter Creek to the basin that would give us a low summit and a feasible line; to develop the entire country between that point and the north fork of the Platte on the east, and the valley down which Mr. Bates was running the line on the north. He succeeded in doing this during the fall and early winter, though with great hardship and suffering, often being without water for days and also without fire or wood. He nevertheless did the work fully and successfully. He met the question and solved it.

On reaching Bitter creek I followed it along the line run in 1864 by Mr. Evans. The country is so marked here, so broken, that there is no question as to the proper route of the road, if it sought Green River by the Bitter Creek route; and we pushed on rapidly to Green River, reaching the crossing August 12th, where Mr. Hodges of the Salt Lake party met me, and I immediately commenced the examination of the line and route heretofore run by Messrs. Reed, Bates and Hodges, to overcome the Wasatch range of mountains and enter the Great Salt Lake basin.

Mr. Reed in his surveys had demonstrated that our line must seek Salt Lake Valley north of the Uinta range of mountains. We were, therefore, confined by that range on the south, and the north rim of the basin on the north.

The country to be examined, therefore, no matter whether the approach was made from the mouth of Bitter creek, or as high north as the mouth of the Big Sandy, or as was afterwards ascertained, as far north as South pass, which covered all the ground on which any of our lines could approach Green river, was that portion of the eastern slope of the basin drained by Henry's fork, Black's fork and Harris' fork of Green river, and of the western portion drained by Weber river, Bear River and their tributaries.

The singular formation of this country was, that after passing the rim of the basin, we struck Bear river, heading far south in the Uinta and Wasatch ranges, running almost due north to Soda Springs or Port Neuf gap, and emptying into the Great Salt Lake. Within this bend of Bear river lies the Wasatch range of mountains, a spur of the Uinta, rugged, bold, and narrow, the approach to them from the east, anywhere near the head of Bear river, or south of Yellow creek, being by a descent from the summit of the rim of the basin; but from points north by tributaries of Bear river it would require a great ascent in a short distance while the descent from the summit to the wasatch west was sudden. The country to the west suddenly gives heading in the Wasatch often canon through spurs and presents formidable obstacles for us to overcome. At the northerly point of the Wasatch, Cape Horn, the rim of the basin opens out to the drainage of Snake river without any perceptible summit, and is known as the Soda springs, or Port Neuf gap. The topography of the country has so plainly indicated this route north and the route by

Bear River, as a means of avoiding the Wasatch entirely, that Mr. Hodges had been instructed to run the line from Salt Lake City up Bear River to the intersection of Reed's line, at the point of the crossing at Bear River, but its great length, being from 80 to 100 miles longer than the Weber valley line, in no way compensated for the extra distance. A careful examination of the north point of the Wasatch mountains indicated a route over them by way of Ham's fork, Hodge's Pass, Bear Lake Valley, Martin's Pass, and Cache valley was so far advanced when the route was discovered that it was too late to run a line over it this fall but orders were issued to have a line run as soon as weather would permit in 1868.

The approach east and west to Martin's Pass through the Wasatch is so short that I do not anticipate a line that will be as feasible as the Weber Valley line. On the Weber valley line the great obstacles to be overcome were the long tunnel at the head of Echo canon, the heavy grades, and also the tunnel and heavy work in the Weber river narrows and canon. To avoid the Echo canon tunnel, great effort was made to get from Bear River into Weber by some other stream, by Lost Creek or one of its branches; but the instrumental survey of all the approaches for miles north demonstrated that the Echo canon line was the best. Instructions were then given, after a personal examination of the line, to avoid the tunnel and lower the grades, if possible, by seeking the canon by other ravines. Mr. Hodges was successful in this, and his line as located, reduces the tunnel to 600 feet, and the grades to 90 feet. I am confident, however, that the work here, by a more careful location and study, can be reduced still further and I hope the curvature reduced.

On Dec. 11th and 14th, 1867, preparing for our work for the coming year, I wrote the following letters to Mr. Oliver Ames in regard to my plans for obtaining water and equipment:

Washington, D.C.

"It is evident to me that we will have to make new preparations and increase materially our facilities for getting water on our line. We are travelling now in a country furnishing running water at all seasons of the year.

I think that a mill and tank gang should be organized who should put in mills and tanks not only at regular stations, 18 miles apart but at suitable places half way between each, at the point where our intermediate side tracks are going. This party should proceed the track men so far as to at all times have the well ready before track reaches the point and who can demonstrate far enough in advance the practicability of obtaining water at different points on the line so that our stations can be located in reference to it.

Where wells do not furnish sufficient supply, drainage to the well by tiling should be adopted when practicable; when not, reservoir should be made. The soil west is such that it will hold water in lakes or reservoirs and in many places reservoirs can be dammed at small cost and water be had at all times. I am confident that the placing of tanks and side tracks at the intermediate stations as road is built will save time and money. The amount of side track there would not exceed 6 percent of line. The side track from 100th meridian west, tanks, wind mills, coal sheds put in this summer by company are all chargeable to the contractors. But more are now charged up to the company as repairs.

This would make a vast difference in cost of the road, if carried to proper account in its statements. I also think that we should put up immediately, wind mills at all the permanent stations, affording plenty of water, and hereafter, that contractors should be required to do this as fast as road is built.

The great benefit of the well and tank party being far in advance of track is, if they fail to find water at a point designated as a station they can move a mile or two either way and find it and we can establish our stations at such points. From Medicine Bow to North Platte, about 40 miles and from North Platte 50 to 70 miles west, we will be troubled for water and we should not allow ourselves to get in same condition road is in. I also urge in the organization for next year, full preparation be made to follow our track with the proper station houses--and that early in the spring we get under full head way our machine shops at North Platte and Cheyenne--that machinery should all be contracted for this winter, ready to go out into shops as soon as roofed. I find considerable complaint here regarding this matter, especially now when water is lacking on line, and Government is pressing us to get forward its winter supplies.

In my opinion, by taking a little precaution, we can provide for and accommodate ourselves to the water as furnished by the springs, or as we may find it on the line, unless we do, you may find that it will be very costly supplying it each year from stations or tanks not located in reference to the economical operation of the road."

"I think the question of rolling stock on the road should receive attention. Mr. Congdon our master mechanic says to run four trains a day from Omaha to Cheyenne will take 71 engines, as follows:

48 for daily running of trains.

8 for road repairs.

10 extra engines to take place of those disabled.

6 pony engines for switching.

This is estimated for road built with short supply of engines. They are overtaxed and necessarily are frequently disabled and strained and it is cheaper and more economical to give fully supply in commencement.

In addition to this, it will require at least an additional engine for every ten miles built next season. I am fearful that our small supply this winter will use up many and we shall come out in spring crippled, though Mr. Snyder would know best. Under the \$7500

contract, ^{per mile} you have plenty of funds to fully equip the road, and I urge that the contracts be made and a full supply placed on the road. We must open in spring well equipped, well organized and this winter is precious time to us. After we get 50 miles west of Sanders I consider the fuel question solved for next year and we shall from Cheyenne west be in better fix than ever before as the surrounding country for 150 miles west will afford plenty of good pine, wood when coal is not abundant. Our tanks hereafter should be 24 to 26 ft. in diameter and 14 to 16 ft. deep. They are now too small and too far apart. The large tanks should be built at regular stations and small at intermediate and all should be immediately supplied with better pumps and wind-mills. "mill".

The track laid per month the past year ¹⁸⁶⁷ was as follows:

40 miles for October 1866.
13 miles for November, 1866.
5 miles for December 1866.
5 miles for January, 1867.
5 miles for February, 1867.
6 miles for March, 1867.
1 mile for April, 1867.
41 miles for May, 1867.
39 miles for June, 1867.
30 miles for July, 1867.
38 miles for August, 1867.
10 miles for September, 1867.
40 miles for October, 1867.
10 miles for November, 1867. 1st to 15th.
10 miles for November, 1867. 15th to 31st.
12 miles for December.
289 miles, total.

"The first of January, 1868, I commenced organizing the parties for the location of the lines West of the Black Hills, across the Laramie Plains and for the preliminary surveys west of Salt Lake. I had instructed Mr. Blickensderfer to engage one division engineers and four or five Assistant Engineers, fixing the price for a Division Engineer at \$250 a month, for first Assistant at \$150, and the 2nd Assistant from \$100 to \$125; also one engineer for the Missouri River Bridge.

During this winter I was in Washington and had my engineering office in the Interior Department. It was a fortunate thing that I happened to be in Washington as a great many questions were brought ^{in Congress and the departments} up and there was a great deal of friction on account of the attitude of the Central Pacific and the friendliness of the Government to them and as I was right on the ground, I could generally meet and solve them.

The land department of the Company was under me and on January 4th I wrote Mr. John Duff, Chairman of the Committee on land grants as follows:

"I enclose herewith the tracing of our land maps showing all our lands with ten and with twenty mile limits. The India ink coloring showing the division selected by me as Agent for Trustees and Company. The maps also show timber, topography, &c. and is as nearly perfect as can be made. I accompany the map with a list of the lands to each piece. I have set a price that they should now, in my opinion, be offered for sale at.

There price has been set by Mr. Davis who selected the lands but as soon as sale commences, they will have to be re-adjusted but will now form the ground work on which all other apportionments can be based. The figures in pencil show the cost of entry of the lands. A great deal of labor has been put upon the list and map to bring them in a shape to place upon the market. I can at a moment's notice, enter all of a part of the list, having had duplicate lists made and having signed the certificates as Agent to enter them. I am very confident it is the true policy of the company to bring their lands into market, not only in a financial point but that by the settlement, a local trade may be built up along our road.

Heretofore the Government has allowed settlements under the Homestead and preemption acts on the even sections of all lands within the 20 mile limit, but by the following decision of the Commissioners of the general land Office and Secretary of the Interior, you will see that no settler can now enter upon the government section and the company not selling odd sections actually prohibits any settlement within 25 miles on each side of the railroad line. If the company ever enter the lands which will only cost some , it will then open for settlement under the Homestead and pre-emption acts, all Government lands along our line and will also throw them open to cash entry at \$2.50 per acre. There is no quastion but a large emigration will take advantage of this low price and advantageous offer by such action on our part. There is already great inquiries for these lands and there is no necessity at present of our pressing the sale. My idea is to get our lands into market, thus opening up the Government lands at \$2.50 per acre and drawing on to them all the settlers we can, thus increasing the value and price of ours, and we selling , can collect for by actual settlers, rather holding back our sales and encouraging the settlement and sale of Government Lands. This will enable us to receive more from sale of our lands than we can if we push them on the market now.

For the present, under this plan, we can run the lands off cheaply and keep it directly under our supervision, and all the time be perfecting our system of record and sale.

The list I now submit is as follows on first 100 miles west of initial point:

Acres in 10 mile limits--	298,148.50.	Land office fees to enter
	\$3,552.00.	
Acres in 10 to 20 miles limits.		403,855.58.
Land office fees to enter		\$4,912.00.
Cost of taxes between 10 and 20 mile limits		712,085.00%
Total amount due company.		702,004.08.
Total cost of fees on land.		20,549.00

It will be seen by the payment of \$20,549 we will throw into market of our own land 702,004.08 acres and will at same time bring into market the same number of acres belonging to Government. That is, we can, in our advertisements for bringing local trade and settlement to our road, advertise the sale by Government of 800,000 acres at \$2.50 per acre and the sale by use of \$702,000 and at such price as we deem best. In my opinion the company should not hesitate one moment in taking the necessary action to bring into market the Government lands whether we sell or not.

The cost of obtaining the list and making maps has been very small. I have employed one man only, Mr. Davis, especially for this purpose, all the rest of the work has been done by my engineers and draughtsmen at odd times when other work did not press.

In addition to this, we have now nearly ready a full system for sale of lands with the necessary plat, records, books, &c. In getting this up, Mr. Davis has visited the Ill. Cen. Co., the C.R. & P. Co. and I have also looked into both systems and I am certain we will have a better system than any heretofore inaugurated, those companies have been very accommodating to us, have shown us the good parts of their systems and enabled us to evade the unnecessary parts of their system and to add parts that a long experience in land sales has told me would be advantageous to us. I think our plat books will be the most careful and ample ever gotten up; by it, at a glance, we can tell the position, quality and cost of land its then condition, whether for sale or sold, and its description as given by the Government surveyor, who selected the land.

Mr. Davis is now under my instructions examining all homesteads within the 100 mile limits to ascertain the actual bonafide settlements all other will be contested and decision had so as to transfer all such lands not actually held by settlers to the company.

As soon as the system of sale and record is fully completed, I will present it to you for approval."

A new contract was made by the company with the construction company based upon securities instead of cash. It was known as the Oakes Ames contract and a portion of it was as follows:

"Commencing at 100th meridian.

1st 100 miles	--\$42,000	per mile.
2nd 100 miles	-- 45,000	" "
3rd 100 miles	-- 96,000	" "
4th 100 miles	-- 80,000	" "
6th 100 miles	-- 96,000	" "

At least 350 miles to be built in 1868 provided U. R. Ry. Co. can transport material.

To expend \$7500 per mile on machinery shops and equipment. Payment is to be made on estimate of chief engineer in bonds and stock on certain conditions. All to be built to the satisfaction of engineer and upon the specifications of Chief Engineer. This contract also included the telegraph but it was purposely so drawn that almost any quibble or construction could be put upon it by the contractors. The contract was never submitted to me-- just the prices."

On Jan. 4th, I wrote Mr. S. B. Reed in regard to our work for 1868 as follows:

Washington, D.C.

"When I wrote you from New York, I intended to write and post you on what I thought would be the plan for carrying on the work for this year. I recommended that the work should be divided up under you, or in other words you should have under you three or four heads of different parts of construction, such as a Supt. of bridges, whose whole time should be devoted to that work and who should be held responsible to keep them out of way. Another of tanks, wells, stations, &c. I think you should test the country in advance of track, dig your wells and get at the living springs of the country if there are any and when you find water in abundance, accomodate the stations to these points instead of forcing the wells to stations arbitrarily fixed as heretofore. Water will give your great difficulty, especially between Medicine Bow and North Platte, 50 or 60 miles and between North Platte and Bitter Creek 70 or 80 miles, last fall there was no stream or springs of importance over that section of country. But, no doubt, exists in my mind that you will be able to find it by taking the proper time.

I should also have another man to look after ties, one for grading and perhaps a train dispatcher, so that you can have the time you need to plan the organization and look generally after all. This would enable you to put the detail on men who you could hold responsible and who would have an eye to their separate departments and make all come to time.

The company want to build a large amount of road, to do it they must give you more authority and allow you head men. I also recommended that road as fast as completed to a point where it was best to change running base should be turned over to the company and they handle all to that point, also take charge of the transfer at the Missouri River. This would avoid any hitch there. I urged the placing of at least 200 miles of iron on the Black Hills summit and a large amount of timber, giving you a large amount of material to fall back upon in any emergency; ties and bridge timber are being gotten mostly west of summit; you would not be dependant upon the 500 miles of road in your rear to bring it up and it will leave that portion of road to the immense business I think is bound to go over it this season.

They have let or soon will, contracts for machinery, say 50 new engines and one for every ten miles built, and all cars needed. Snyder can build what he wants at Omaha for his local business. While I can see plainly the difficulty you have labored under, and while the company should see it, they do not always do it and now we should prepare this winter and do all we can to forestall and avoid the causes of delay the past year. Briefly, the above is about what I recommend and hope it will meet your views. They agreed with me mostly in these matters and your knowledge of the practical working of everything connected with construction will enable you to arrange it so as to meet successfully the work before us.

One thing do not hesitate to call now for what you want next season, and in picking your head men get good honest active ones if you can and make them do their part. I would also commence building telegraphy as soon as weather will permit and stretch it right through to Bitter Creek and to Green River as soon as reached. It will be of great benefit to you in grading, bridging and in reaching the work that must be done west of Green River. The cost is a baggetelle compared to its advantage. Bent, I think would like to go to work under you and I believe he would be a good man for some one of the positions. Last week I closed up the Denver business and we will have that ^{branch} to build this summer. Now I am to work on the Portland Branch and if we get the legislation that the N.W. Coast ask, we will have that to build via Ham's Fork, Bear River, Port Neuf, Gap and Snake River to Columbia River all the N.W. Coast, Oregon, Washington, Idaho and Montana are working vigorously for it and even if we do not get it this winter, we will next. This will give us the best and shortest route to the Pacific avoid the Sierra Nevadas and make us a star of the through lines, and at the same time, kill the Northern Pacific. Our company will build the Portland Branch even if we get no Government aid. By it we can get to navigable waters of Snake and Columbia in 300 to 400 miles.

I want to hear from you how you are getting along and what prospects are for next year. How does the line upto summit work, &c. We wish to be remembered to Mrs. Reed if she is with you. Where do you think we should put our town at Sanders? If parties with capital should go in on Laramie Plains, at Little Laramie, Medicine Bow or North Platte and establish a large lumber business by getting logs in, sawing them and supply demand of people along the line it would pay? and where would be best point to put mills and get logs I expect to put Blickensderfer with 3 or 4 parties on location from Gree River to Salt Lake and beyond if necessary and Evans with 4 parties from Sanders to Green River and hope to get out of your way. Hodges line over Wahsatch is 90 ft. grade throughout; has heavy work, 60° curves and gets tunnel 600 ft. long, 1 mile down Green River by cutting into a ravine to north of line around narros, he throws out most of heavy work. In New York matters are all right, I guess. I hope you will get to summit; if you do not, it is not your fault. What is weather?"

On January 4th, 1868, Mr. House wrote me that Gen. Myers, Quar. Master at Omaha, would furnish our parties with twelvewall tents, at either Bridger or Camp Douglass, and requested that I get an order from Gen. Grant to cover such issues. We had equipment for several parties distributed along the line, Ft. Sanders, Ft. Bridger and on the Elkhorn.

There was a good deal of friction in the company as to how the road should be organized for construction for the coming year. Col. Seymour who was meddling in everything in connection with the road, had made some criticisms of Mr. S.B. Reed, who had had charge of the construction and I was called to New York to adjust these matters. I insisted upon Mr. Reed's being given charge of the construction. I saw no reason for any change unless the work became so heavy during the season that he had to have an Assistant and I suggested that if he did, that he be given Mr. James A. Evans. Some of Mr. Reed's friends in New York wrote him, and On Jan. 9th, 1868 I received the following letter from him:

"Yours of Dec. 27th is received. I am aware that the New York complications will render any place on the road that is desirable uncertain regardless of consequences to the interest of the work. If the Company are not satisfied with the management here it is their duty to make a change.

I have no time to fight for private interest or to keep track of mistakes made by enemies. My whole time is devoted to the work and I had flattered myself that the progress made was satisfactory. There have been parties here who show a disposition to control the whole work, backed perhaps by parties in New York. My plan has been to do the best I could for the company regardless of this or that man or interest. You have my thanks for pitching in on my behalf and I hope to receive a full statement from you of the fight.

Col. Seymour has written me a letter in regard to location on east slope of mountains, sending a copy of a letter said to have been written to President Ames; doubtless he has sent the same to you. As the Colonel chooses to force me into the fight on location I shall not answer until I hear from you in regard to the matter.

The track is laid 549 miles. Grading to summit will all be completed in four weeks."

I saw from letters received from Seymour that we were to have the same fight during this year as we had had during the last and I

Pg. 710 - is out.
Was a duplicate of
Pg 641. Letter July 15-1867
from Dodge to Dillon.

-707- 711.

The fact that in all probability the Union Pacific road would not reach much beyond Ogden, had lead me to investigate the question of our continuing the road from there to the Pacific Ocean, through Idaho and Oregon to Portland, and I had given this a good deal of study and was anxious to put engineers on to examine that country. I therefore wrote to Mr. Ames in relation to it. On January 7th, ¹⁸⁶⁸ he answered this letter saying:

"I am satisfied the road to Oregon will be a first-rate operation when the time comes for doing it but with the immense amount of other work we have the present year on hand, and the probability that all aid by Government will be refused to lines of Pacific Railroads until those now in progress have been completed, leads me to think that the Oregon Road will get the go by this year. If, however, it should prove the Government subsidy should be obtained for this line, and that we should be the parties to secure it, then our interest would dictate a support of a bill substantially what you desire, as showing the favor that our corporation would extend to the proposed road to Oregon."

"The Union Pacific Railroad Company will use their best efforts to secure the construction of this road whenever the people on its line shall awaken to this importance. It cannot be built without Government aid, but our company should not appear as applicants for this charter, but it should come through the exertions of representatives of Oregon."

I had already introduced in Congress bills covering this line but they were not taken up with a friendly disposition in the House and Oregon itself did not move in the matter; therefore nothing was accomplished. I was satisfied in my own mind that when the Union Pacific was completed, that we should be forced to build it by private enterprise.

The contracts that were let for the work for cash for the coming year by the Construction Company were:

Earth excavations at 35 cts. per cu. yd.
Bridging at \$80 per M.B.M.
Iron at 8 and 12 cts. per lb. in bridge.
Solid Rock at \$3.50 per cu. yd.
Loose rock at \$1.50. " " "

Mr. David Van Lennep, who had been my geologist, a very competent man, left me to go into the employ of a large corporation as a mining engineer. He was a great loss to me because I depended upon him to finish up the geological survey which he had projected, covering the whole country in which we run; however, his examination had, up to this time, developed nearly every coal

mine along the Union Pacific road that has been utilized up to this time, 1911, and a good many others which have not yet been opened but which are said to be feasible working mines.

We made a contract with the North-western railroad to transport our iron from Chicago to the Missouri River at \$6. 00 per ton, we to furnish the cars, and we agreed to pay Mr. John I. Blair, who was building the Northwestern road to the Missouri River, a bonus of \$75,000 if he would arrive there by April 1st. There had been a great conflict the past years between the company and the Construction Company. Mr. T. C. Durant, who had been at the head of the Construction Company and who had cost the road a great deal of money on account of lack of experience, interference with contracts etc. At one of the meetings of the Executive Committee, he made this statement:

"I deem it but just to the officers directly in charge of construction to state that in my judgment, if the lines had been located and the grade established, with a view to taking advantage of all the capabilities offered by the country, within the limits preserved by the charter, as has been done to a great extent by the Central Pacific Company, and if the running of the road had been left in the hands of the Construction department instead of being placed under a separate and independent organization, the track today would be laid on every mile of grading that the company has completed. The company would have saved from five to ten millions of dollars in cost of construction, and the character of the road would have been such as to enable it to be operated and maintained with much greater economy and profit to the stock holders than it can now be done."

His idea was that wherever it would save work, we should use the maximum grade of 116 ft. per mile. That was the grade which the Central Pacific used in the Sierra Nevada range, which was a question of necessity with them because they had to raise 6000 ft. in one climb, while the mountains we went over demanded no such grade and the maximum that we made was 90 degrees but when Mr. Durant said this, he said he knew the Government would not accept a line over the range of 116 ft. per mile, when his own engineers had recommended grades of 80 and 90 ft. Of course, 116 ft. grades over much of our line would have saved considerable cost in the road, which he claims should have gone to the stock-

holders but no engineer of any reputation would adopt such a grade on the lines which we had laid over the mountains. I only quote this to show Mr. Durant's methods. He only presented them when he was out of power; when he was at the head of Construction he had no such suggestions to make.

Our building the road over the mountains by way of Cheyennes and leaving out Denver, one hundred miles south, made it necessary for us to build a branch line from our line to Denver to satisfy the people of Colorado. Mr. F. M. Case had been placed upon that work and we had obtained a very feasible line one hundred and ten miles long and had connected it with two lines on our own line, one running close to the mountains and one striking the mouth of the Cache la Poudre and following up the Platte Valley to Denver.

On January 13th, ¹⁸⁶⁸ Mr. Webster Snyder, the Superintendent of the road to Cheyenne, ^{from that point} wrote me the following letter giving the conditions of the road ready for the work that was before it for the coming year:

Cheyenne, Wyo.

"Arrived here Saturday night having taken four days by freight trains to come through and examine matters at every station on the line. Our road is in first rate shape up to Hills Dale, and west of there it is rapidly improving. The wells west of Julesburg are giving us some trouble yet, but I hope to have them all in shape in two weeks. Have had no show yet to give us trouble at any point on the line and all trains are moving promptly. The Missouri River bridged saved us on the fuel question. Am stocking the road with coal from Grand Island west, to be prepared for any contingency. Coal found near here is not suitable for locomotives.

Track is laid twenty-four miles west of here. Casement has disbanded his track-laying force for the present. But two miles more can be laid for some time to come and as it would be very poor track, iron bent &c. by spring, I think Mr. Reed will lay no more until ready to start with full force in April.

We are unloading iron and other material here. There is now no change of cars at Omaha. Tariff on Chi. & N. W. Cars will pay for the bridge, and crossing our own material will save us twenty thousand dollars and over.

We have the new bridges all in up to Silver Creek. Have been crossing the new stone truss bridge at Columbus several weeks. Grading between the two bridges at Columbus cost some \$3000.

Business fair for this season of the year. Travel more than I looked for. I want to get one hundred and fifty miles of iron here before spring, then we will have no difficulty in keeping up with construction and doing all other business. This winter, if not snowed up, I will get all equipment in first rate shape for the season. In all our work I find that coaches, baggage, box, freight and platform cars made at our own shops are superior to any that have been purchased, and cost us no more money.

Bridges west of Sidney are not in good shape. Have had to order over ninety thousand feet of timber to complete them in accordance with original plans. In my report to President, on operations up to Dec. 31. 1867, I will endeavor to show the amount of work done to put the road in shape that it ought to have been in when turned over by contractors."

His letter shows the condition the road was in when turned over to the ~~Company~~ by the contractors and the work needed to put it in shape for heavy traffic. Mr. H. M. Hoxie was appointed Assistant Superintendent by Mr. Snyder.

The Company had not yet done anything in opening up their lands for settlement. Mr. Snyder, who was operating the road, was very anxious that we should make some arrangement by which settlers could go on their lands. He thought it would create business for the Company. I had urged the opening of the lands on the first two hundred miles of the road, as at this time no person could buy or pre-empt any land within twenty miles of the track. The Government had not opened their lands for pre-emption, but the opening up of our lands was bringing the Government lands for sale and settlement and even if we put a price on our alternate sections, so they were not liable to buy from us, it would result in the settling up of the even sections held by the Government. After some time this was accomplished.

Mr. Snyder wrote me the following letter in relation to the operation of the road, taking a directly opposite view from that of Mr. Durant:

Cheyenne, Jan. 13, 1868.

"The arrangements for work next year as per your programme, will be a great improvement on this year's operation. I would suggest that in Casement's new contract, if he secures one, that he has nothing to do with the expenses of train; that trains on construction be operated by the company. Also that he pay tariff rate for all his supplies shipped on the road. We have suffered materially in equipment during past season through carelessness of train men on construction, and the shipping of freight free for a party who sells largely in competition with paying customers is not a safe operation for the road. All contractors ought to pay tariff rates on their supplies. I find that Carmichael and others working by the day for contractors, have been keeping stores for their individual profit and getting their freight free. It is not just to continue that style of operations if they wish to show fair earnings for the road.

We will need at least twenty more intermediate side tracks next season, and large tanks at each."

Mr. Snyder had under him Mr. M. R. Bean, Master of Transportation, who was placed there by the construction people and was entirely in their interests. Mr. Snyder had removed him as incompetent. There was great objections made to this in New York, which I had to go to New York to settle.

Mr. Snyder wrote me on January 12th in relation to this matter as follows:

Cheyenne, Wyo.

"I propose to remove M. R. Bean, Master of Transportation, this week. I am very poor and have a great deal of humility, but I am neither poor nor humble enough to occupy the position of Supt. and have as rotten an administration as Beans under me if I am able to prevent it. One of us must quit the road at once. If the Directors would like to make Mr. Bean. Supt., I will remain with him one month and impart to him all the information I possess relating to the affairs of the road. If they wish me to remain, I must have the power to remove any person who disobeys orders. Had you been Supt. Mr. A. A. Bean would have been dismissed three months ago. I have borne the affair much longer than I ought, and as long as I can. If my head goes off, it is with a clean record and I am ready to start on some other road, as a warehouseman, where I commenced, as I have the muscle, if not the brains, to earn an honest living."

On January 13th, we had a fearful snow storm along the entire line, over two feet of snow falling and blocking our work for some time.

It was very important, if we were to build the road that was intended, ^{for 1868} that we should lay down at Cheyenne at least 150 to 200 miles of material which the running Department were endeavoring to do. In January the Construction Company made a dividend of 180%, 80% in bonds and 100% in stock, which was considered a very handsome dividend. There was nothing equal it before and it run the Construction Company's stock, as sold in Boston, as high as 350. This dividend called the attention of the people to the road and gave them a false idea of what the real profits of the road were. The Capital of the Credit Mobilier, which this dividend was paid on, was only \$1,500, 00, and the company had built 600 miles of road at a cost of perhaps \$20,000,000, so that really the dividend upon the amount of work accomplished was very small, but people did not stop to think how much money had to be raised and expended to meet this dividend; it was not in cash but in 1st mortgage bonds and stock; the stock was not then considered to be worth very much money, if any.

In order that the Military authorities might know long in advance what our demands upon them for escorts, protection, etc. would be for the year 1868, on January 14th, I wrote the following letter to Gen. C. C. Augur, Commanding Department of the plains:

Washington

"It is proper for me to inform you thus early of our plans for this year, and of the protection we will need, that you may make preparation for it.

Between Fort Sanders and Green River, I shall want escorts for four parties, these escorts should be fifty Infantry and thirty cavalry or from 70 to 80 men for duty.

We suffered the past year from the fact that our escorts though apparently large on paper, were very small, in effective force, but being aware of the pressure on you, and the unlimited calls on your troops, we did the best we could under the circumstances. The escorts should be ready to move March 1st, as I shall start my parties then, unless the weather is too severe to live in tents.

For construction, we will want to distribute the force from Little Laramie to Bitter Creek near Laclede, say 200 miles and I would suggest that as soon as we open work, temporary stations be made at Little Laramie, Rock Creek, Medicine Bow, Browns summit, North Platte, Rawlins Spring, Dodge's Summit, Clay Buttes and Bitter Creek or in that vicinity; these posts to be strong enough to keep out detachments to protect intermediate working parties. We shall also need detachments with the tie gangs along the Medicine Bow Range from Little Laramie to North Platte and perhaps one detachment in the Simenoe Mountains. It will depend entirely upon the length of winter, at what time a part or all of this force will be needed. We shall open 200 miles of work soon after the frost gets out of the ground.

I would respectfully suggest that three temporary basis of supplies for the escorts, that one with engineering parties be established at North Platte, Laclede and Green River; this will save time.

I shall establish these points for depot of supplies for my parties. Last year the troops took only 30 days supplies and we lost many weeks by being obliged to lay by while trains and escorts returned to Sanders to replenish, while this year I am to be pushed to ut most efforts to keep out of the way of the track and prepare the line for construction, and any delay on part of engineers will delay that much, the work this year, last year it did not as I was so far in advance.

I also request that escorts take transportation sufficient to haul sixty days rations and forage, this with supplies sent by separate trains to the points named will without doubt avoid any delay.

While we all hope that we shall have comparative peace the coming season, yet I do not consider it prudent to start not amply prepared to meet any emergency. Thanking you most cordially on behalf of the company and personally, for your prompt and great efforts to protect the road, I hope this season will place us virtually beyond the hostile tribes and we will have only to guard the rear. I will thank you to see that officers selected to command the engineer escorts are competent; in fact, they should be the best in the Department as upon them, in a great degree, lies our success in surveys and the amount of work we accomplish."

I had written a letter to Mr. Reed outlining briefly my own plans and then calling his attention to the necessity of keeping a telegraph line far in advance of our track and to have men in the woods during the winter cutting ties sufficient to cover five or six hundred miles of road, and also the necessity of looking up the sources of water supply because that would be one great question that would arise in the movement of our trains. I had also laid down other matters of minor importance and on January 17th ¹⁸⁶⁸ he answered me as follows: Cheyenne.

Yours of 6th inst. is received. Your suggestions are good and what I would like. I had suggested, before receiving your letter, the building of the telegraph line as rapidly as possible to Green River, or as far west as the Company expect to build the road this season.

I shall have to get some bridge timber from Chicago and would like to make contracts for it before opening of spring, also for all timber required for water tanks. My tie inspectors keep me fully posted on the tie question. If Davis, Sprague and associates succeed in filling their contract we are all right. If not, will have trouble again this year to get ties as fast as will be required.

The water question, I am aware, will be a serious one, and must be attended to early and efficiently. Your engineers can assist me very much by noting all places in the vicinity of the line where water can be obtained. Heretofore there has not been much trouble and stations could be located in advance to suit the grade.

As regards the Company's operating the road, it is desirable to have them accept it as fast as possible. At the same time the road should be completed before turning it over. It is almost impossible to do work where the Company are running trains. Should the road, or any portion of it be turned over before it is completed the cost of finishing the work should be estimated, and allow the Company to do it.

I hope the trustees will purchase and send out cars for the new work to be used exclusively on construction and let the Company unload all construction material at the end of the road operated by them.

The stations near Sanders should be located either at the Post or at the small stream west (sta. 2930). The ground at the post furnishes the best water, good at both places.

If the large shops are not built at Cheyenne, I would move them as far west as Rock Creek. Coal is abundant and convenient. Lumber for building cars can be obtained at that place as convenient as any other point on the Laramie Plains.

The grading should be put under contract early in the season to Green River.

I would like to go in with you and others to supply the Company with coal as soon as the track is laid to the coal on the Laramie Plains."

On January 22nd, ¹⁸⁶⁸ the Commissioners examined from the 510th mile post to the 540th mile post, which was then within one and one-half miles of the end of the track laid and accepted it. This point was some thirty miles West of Cheyenne. At this time there were 1800 men working on the heavy grading in the Black Hills.

There were five hundred men manufacturing ties at the heads of the two Laramie Rivers. The snow in the woods was three feet deep on the level which made it impossible to do any hauling to the streams. At this time, the snow in the Black Hills was only two inches deep and very little in the ravines.

I had been pressing General Sherman and General Augur to make preparations for the furnishing of my engineering parties with escorts and for placing troops along all the line that was to be opened up for the purpose of protecting them from the Indian Depredations. The Indians had been aggressive since 1867 and from the information I could get were preparing to swoop down on us as soon as we opened up work in the spring.

In answer to my letters, on January 23rd, ¹⁸⁶⁸ General Sherman wrote me as follows: Washington.

"Last summer when on the Indian Commission, Senator Henderson repeatedly told me that the subsidy of \$16000 per mile to Railroads and the liberal compensation to the stage lines was intended purposely to be in line of "protection" by the military. Gen. Augur has shown me your letter of the 14th, in which you ask pretty large escorts and posts for the protection of the operation of your road. I wish you would see Mr. Henderson. Show him this, and have a simple resolution passed Congress directing the General in chief, or President, to afford suitable military protection to the parties engaged in the location and construction of the Pacific Railroad. This will warrant the expenses to which we are put, in providing the troops and trains employed for that purpose.

We had to bear the blame of precipitating an Indian War, because we tried to protect these roads and stage lines, and that was used as an argument why the military should not be used for a purpose antagonistic to the Indian nation."

On receipt of this letter, I introduced a resolution in Congress providing for this which was promptly passed giving the military full authority in the matter, although Congress thought they had already given it to them.

The question of coal for fuel for the road when completed was a very important one and in the location of the line to Denver I had instructed Mr. F. M. Case to keep this in view in his location. He was disposed to throw his line out to the Platte Valley which was a cheaper line, while the coal beds lay nearer the mountains, and I had made objections to his line on that account. On Jan. 26th he wrote me that he was satisfied the coal veins run under the Platte Valley but Mr. Van Lennep, the Geologist, had come to the conclusion that the workable coal was nearer the mountains. He knew the mines

veins which had been developed on Clear Creek, Boulder, etc. were much heavier veins and I was anxious to get near to them. It was my intention, originally, to build the line by them. It was a much more expensive line, ^{than the one} and was built by private enterprise from Denver. They kept out in the Platte Valley and the result was that there was no coal on the line by way of Greeley to Cheyenne. In after years we had to build the line from Denver up through the coal regions to Ft. Collins and then on to Cheyenne which should have been the line originally built. The traffic today in that country is so large that it supports two or three lines from Denver to Cheyenne.

On January 30th, ¹⁸⁶⁸ Mr. Snyder wrote me that the weather was fine; no snow. Trains moving rapidly and construction material going out very rapidly. Report on the work in the Black Hills quite favorable. The discovery of gold at the head of the Sweet Water ^{near South Pass} is attracting much attention and I fear will effect the labor question seriously on construction, and perhaps in operating. It will, however, help us much in passenger earnings. Cash business continues very good. I want to take in enough to pay operating expenses, but am more anxious now to get construction material forward. Sprague has a large force at work on ties, if he can only get them to the track and we can get 200 miles of iron to Cheyenne this winter, then there is no reason why 350 miles cannot be laid this year." This was his estimate, while my plans were for over 500 miles. He says: "Mr. Hoxie is helping me very much. He does everything thoroughly and will be a valuable man for the company. The bridges West of Julesburg, particularly west of Sidney, are not what they ought to be, and I fear will give us trouble. They were not completed according to the original plan by contractors. I have a force on them."

On Jan. 30th ¹⁸⁶⁸ he wrote me again: ; Omaha.

"Mr. Ames wrote me a severe letter, on the 24th, ^{re}approving me for the removal of Bean and the appointment of Hoxie; also stated that a new Supt. would be appointed from Cheyenne west and that he considered Bean a very competent person for the position. I appointed Hoxie only after receiving a letter from Mr. Ames, that my appointment of him would be accepted and laid before the Board for approval.

I only write now to let you know that in Hoxie's case, I did what evidently I was given authority to do. If the New York fight is transferred to Omaha, I propose to quit. I want to either get along pleasantly with all or try my luck somewhere else. Since Bean quit there has been some order on the premises; and on the line of the road, the roughs have had to travel.

The Company ought to have here a Managing Director, one who can at once decide all questions of importance, and it ought to be a man who is a large stockholder, in whom all the rest have perfect confidence. As I have been alone here most of the time, I have had to do many things not strictly in my line of duty, yet prompt action has been necessary and I had to assume the responsibility."

about

I knew that Mr. Ames' letter was written to Hoxie after the opposition of the Durant party had exhibited itself in the Board but I had no fear of any action. I knew they would not take the responsibility of removing Snyder. I immediately wrote Mr. Ames that Mr. Snyder had withstood Bean much longer than I would have done; that his removal was beneficial to the company; that Hoxie was of the material which was needed in a country where we had to meet all kinds of conditions, roughs, robbers, etc; that he had the nerve and the faculties of getting along with men and that I trusted no further action would be taken in this matter, and none was.

On February 1st, ¹⁸⁶⁸ I had matured the plans for the work for the year 1868 so as to cover the country from the summit of the Black Hills to Ogden and Salt Lake. I was satisfied that with the material Snyder had piled up at Cheyenne, that we could at least reach Ogden, about 500 miles. I was also satisfied that after communicating with Reed, Evans and Blicksderfer in relation to the condition of the road, its equipment and the ties that were being gotten out, that if we could get to work on the track by April 1st, that we could very nearly reach Ogden within the year.

My plans were to give Mr. James A. Evans the ~~survey~~ ^{surveys} from the summit of the Black Hills to Green River; Mr. Jacob Blickensderfer the ~~work~~ ^{surveys} from Green River to Ogden and Salt Lake with outside parties to handle the country, if necessary, from Ogden West, using for the time being the outside parties to ~~handle the country~~ develop a little more the crossing of the Wasatch range. I instructed Mr. Blicksderfer to place his first party at a point on Bitter Creek where Hodges ended his located line, to re-locate west on a grade not to exceed 60 foot, if possible, to rise the Piedmont range with it

and to avoid the heavy tunnel in Reed's survey at the head of Echo. His second party was to be placed at work on the East base of the rim of the basin and locate over the Wasatch, the three parties to work from the head of Echo Canon west to Ogden. He says: "I look upon the crossing of the rim of the basin and Wasatch as the points which require the most study and to avoid, if possible too many crossings of the Weber and obtain two short tunnels and if possible hug the north slope of the valley so as to avoid snow slides, the important points of this location being Green River, the rim of the Basin, Weber Canon, the Wasatch and Weber narrows."

Mr. Blickensderfer had three parties under Mr. F. S. Hodges, Mr. Bates and Mr. Morris.

My instructions to Mr. Evans and Blickensderfer were as follows:

"You are assigned to duty as engineer in charge of the Laramie Division of the U. P. R. R.

There will be placed under you three parties, which you are to organize. Col. Hudnutt will be placed at head of one, and the head of other two you will select. These parties will be placed to work west of Medicine Bow so as to the best and most speedily locate the line, 1st to Bitter Creek and then to the junction with Mr. Blickensderfer's location some five miles east of Green River in Bitter Creek Valley. As fast as 20 miles of line is located, profiles, maps, notes &c. will be immediately and directly forwarded to Mr. Reed, and a copy sent to the Omaha office to be copied and forwarded to me.

Time, you understand, is the important part in making this location and I therefore desire that parties be started out by March 1st, if weather will permit.

Gen. C. C. Augur has given the necessary orders to have escorts ready for you at Fort Sanders and I advise a temporary depot for stores be made at North Platte and Laclede or near there. I have also stored at Granger on Black Fork, grain for one of your parties which can be obtained on their reaching Green River.

The profile of location must show very correctly the bridging and clear water way needed, and as soon as possible after reach location an estimate of quantities, bridging, etc. will be sent to Mr. Reed and to the Omaha office.

I have given separate instructions in relation to responsibilities of chiefs of parties. An invoice of everything turned over to them that is property of Company will be made to each chief and duplicate forwarded to under officers and receipts taken.

In location west, I am anxious to get to Green River with no grade to exceed 60 or 65 ft. and lighter if to be had without too great expense of alignment and work.

It will also be your duty to look after the construction west of St. Sanders, so far as I have any control over it under the Oakes Ames contract. You will also organize a party of practical miners who will under your instructions test and open the best coal mines on the line so as to develop their feasibility and capability of furnishing this road with coal. This is an important matter and all mines opened and tested will be properly claimed for our company or for members of it as the district law of that country may determine to be.

You will keep me fully advised of all operations of the different parties writing me when possible at least once a week and the notes, profiles and maps must be promptly forwarded to Mr. Reed and to my office at Omaha as fast as possible, that we may cause no delay in construction."

Instructions to Mr. Evans:

"Instruct chiefs of all parties to notice carefully all streams, springs or lakes of living water between Medicine Bow and Bitter Creek and when profiles and maps are sent to Mr. Reed make note of it and them for his instruction. It is very important that Mr. Reed as well as ourselves should be thoroughly posted on water question in the country mentioned."

Instructions to Mr. Blickensderfer:-

You are assigned to duty as engineer in charge of Utah Division of the Union Pacific Railroad and will proceed to Utah at the earliest practicable moment to prepare the parties for the field. I desire that for the present three field parties be organized and if the weather will per it that they be placed at work on location about March 1st. The camp equipage, transportation, &c. now in Utah belonging to the Union Pacific Railroad will be used and what additional is needed will be purchased there. I herewith give you orders from Gen. Grant to purchase camp equipage ^{from} the Q. M. department at Ft. Bridger or Camp Douglass.

On the line you will need two four mule teams and possibly one two mule team to each party with one saddle horse or mule for chief of party. I desire one party placed at work at a point on Bitter Creek where Hodges ended his located line and the party to relocate west or reexamine Hodges location. As soon as final location is made to Blacks Fork, profile with grade ^{low}, ^{maps}, level notes and alignment will be promptly forwarded to Omaha office, so that they may be turned over to contractors and work ready to open early in the spring. From the west profiles, maps, notes, &c. will be forwarded as fast as location of each section of twenty miles is finished.

The second party will be placed at work near the east base of the rim of the basin and location made west over the rim and into the Weber Valley.

As soon as location on this part is finished to Bear River, notes will be forwarded as above and third party will be placed at work up head of Echo Canon to reexamining Mr. Hodges location at that point and the best possible location obtained over the Wasatch range. I desire to overcome this range with no grade to exceed 90 ft. if possible without too much curvature and too much work. The long tunnel at the head of Echo, on Reeds line, is very objectionable and should be avoided. Mr. Hodges location throws out the tunnel with 90 ft. grades, but he has great curvatures and parts in a tunnel one mile from summit, some 600 ft. long.

I look upon the crossing of the rim of the basin and Wasatch as the points that require most study and leave the matter entirely to your judgment. It being ^{im}possible to give definite instructions in the matter. I desire the grades flattened on curves so as to equate the friction on curves to tangents. It is also important that a speedy final location of the Weber Narrows be made. Mr Hodges location seems from profile and map, good. He recommends some changes made, you will examine.

The great question here is to avoid too many crossings of Weber and obtain two short tunnels, if possible, hug the north slope of the valley. Snow slides are said to be less frequent on that side of the valley than on the south, and in fact, one of the great questions to study in the whole location is the snow question. From the foot of the Narrows, the line in my opinion should be kept on north side of Weber River to just above the Weber Canon, then cross, and cross back again to north side at Wells Gate or Devils Gate and de bouch out on valley below Webers Bridge, Green River, the rim of Basin, the Weber Canon, Wasatch and Weber Narrows, which are the important points for us to settle location on first as we desire in May or June to open work at all these points. The matter may be such east of Wasatch that you cannot work in March, but can in the Weber and Sale Lake Valley. You must use your judgment in the matter and get to work as early as possible. The great question with us is time and every moment possible must be used. The maps, profiles, &c. that I left with Mr. Hodges has my remarks on them as I examined the line and

and country. In my personal interview with you, I have given you more definitely my own views, but as I have before said, you are left entirely free to use your own judgment fully in location and obtain the best possible line to be had. I consider the general route of the line fixed as crossing Green River near mouth of Bitter Creek, thence to Blacks Fork, up Blacks Fork to Muddy, up the Muddy (and the location up this stream will need study Reed's line crosses the Creek too often. I thought line could be laid on the Valley table but may be mistaken) and over the Rim of the basin south of Quacking Asp Hill, then across Bear River and over the Wasatch summit in the vicinity of Reeds, Hodges and Bates' lines, near head of Echo Canon and then down Echo to Weber and down Weber to Salt Lake Valley from there west. As soon as party is at liberty I will send further instructions for surveys west of Salt Lake.

I would suggest for speedy work and to save time that you make a base of supplies at Green River or Grangers, leaving a man in charge, so that Evans party can draw from them if necessary, the staple articles such as are used in camp and grain for stock being what is necessary to have. The experience of Hodges, Bates or Smith will be of great aid to you in determining the outfit of each party. It should be made with a due regard to economy, but in such a manner as to render the parties most efficient.

Maps and profiles, notes, &c. of that country and of all surveys heretofore made are in the hands of Messrs. Bates and Hodges in Utah, they will be under your orders exclusively and will be turned over to you with everything you desire and give you all the information you need or they have. From Omaha you will take a full supply of profile mapping paper, tracing cloth, field books, vouchers, pay rolls &c. and with the instruments in Utah the Division engineers and Assistant will be required to furnish the additional ones needed for the parties.

I also desire you to report to me often and freely and when convenient about once a week of the progress of the work, your successes &c. addressing me in Washington till I return to Omaha. I accompany this with a letter of credit, all drafts will be drawn on me at my office in Omaha, and when drawn a letter notifying J.E. House of Omaha of that fact will be sent him so that he can make proper arrangements to meet them.

All company property will be invoiced to the chief of each party and receipts taken so that each chief can be held responsible for all property in his charge and made to account for it at the end of the season. A duplicate of the invoice will be forwarded to Omaha office for file; vouchers in duplicate will be taken for all expenses incurred and returned to me at Omaha office from time to time as they accumulate so that credit may be given on your account.

The expenses of party in field or camp will be borne by the company, such as rations, transportation, &c. when out of the field, in cities or in office each assistant and chief of party will bear their own expenses. Last year considerable time was lost by parties waiting for provisions, escorts, &c. which on the plan I suggest and with an engineer in charge in the country, they are operating in, can this season be obviated."

The New York parties, headed by Durant, were not yet satisfied with Mr. Snyder and made a new attack upon him. Mr. Snyder sent me his resignation to be used whenever I saw fit, and I found it necessary to go to New York to take this question up. I went before the Board of Directors, laying before them my plans for the year and the necessity of utilizing the experience of men who had been on the road and the impossibility of carrying out the plans under new and inexperienced men and especially under such men as Bean. I presented to them a letter from Mr. Snyder, dated Omaha, 7th, ¹⁸⁶⁸ which impressed them very much and they assured me that my plans should not be interfered with. Mr. Snyder's letter is as follows:

"I have already troubled you so much with my personal matters that I hesitate to write more, yet I will venture to say that which I think ought to be said to justify myself.

In the first place, the Directors know but very little of the affairs of the road here. Every employee might write them twice daily and yet they would know but little of the actual working of the line, reasons why, &c. &c. Letters won't explain it; a man must be on the ground to study causes and consequences, policy, safety, profit or loss, everything. My instructions have always been very limited. Differences in the Board of directors have diverted attention from here, and I have been left to hew out my own way, and the question ought to be now, whether the road has been managed properly, honestly and economically. The only way to test that question is to make the examinations here, probe every department, see where the leaks have been, if any, and discharge at once incompetent or dishonest employees. I want now, and always have wanted, such an investigation by a thoroughly competent person. I urged it upon Mr. Ames when he was here last.

Since Beam was removed we have had a different administration on trains. The loafers have been removed and everything on the road has improved. Whiskey is no longer the principal motive power. Train men understand their duty now and know they have got to perform it. They have more respect for themselves, and treat patrons of the road respectfully. There is now some character to the transportation department, and the travelling public appreciate it.

The directors ought to know that old R.R. thieves from all parts of the States are flocking here. They look upon this road as a Government institution, and come here to steal all they can. It is not necessary to stock this road with men known to be thieves, as others can be procured. My policy has been to clean out those characters as soon as their sharp practice was manifest. If a man comes here with a dime, borrows money to bring his family, has no income but his salary from the road, and in six months on wages as conductor of \$3 per day saves money enough to live at the rate of \$12 per day, and loan money to his friends, it is sufficient evidence to me that there is some stealing. His discharge from another road on same ground only confirms my belief. And I don't believe in splitting hairs or paying \$1,000 to detectives to work up the case. It is safe and cheaper to get rid of the man at once.

That the business men of Omaha have a prejudice against me, is I think a mistake. I have refused granting passes to many of them, and have declined giving any special freight rates. They have all been treated alike, civilly always, I think, and have no more right to complain than a New Yorker who pays his fare and freight bills. In purchasing, of course, we buy of the man who sells the cheapest. Our supplies come from Chicago and the East for the same reason that Omaha merchants do not buy of each other. We can do better. If Omaha had built the whole or any part of this road, its merchants might claim some special favors. In the question of finance they must expect the road to study its own interest, doing, of course, all it can consistently to build up all the places on its line. In speaking of the business men of Omaha, I have no reference to John Harbach or E. Creighton. I have more friends here than both of them, and their testimony in a matter of this kind is worthless. If the directors think that all the business men of this country are Christians then it is perfectly safe to run the road without a head. If to make myself popular with all I give every man who asks it a pass and ship his freight at half tariff, there would not be much money for our pay rolls. If these men growl at my exactions for the road, may it not be presumed that I am looking out for the interests of the Company? If I have any "pets" to whom special favors are shown, or grant any favors on account of locality, religion, politics, relationship or for any other cause, it can easily be ascertained by having an examination made. My position was given me to look after the welfare of the road, earn as much and spend as little for them as possible. I have tried to fill the bill. Any man who has authority to give passes can make himself popular, and any man who manages this road will make himself unpopular with certain classes if he attends to his legitimate business.

You are right on my feeling as to situation here. Salary is no object, and glory is not a part of my creed. I will not act as Supt. without power to discharge any man who neglects his duty or don't know enough to perform it. The case now made is a good one, let it be decided at once. They can offer me no salary or inducement that will keep me here in charge, and responsible for the management, if my hands are to be tied and the road plundered under my own eyes."

I also had a letter from Mr. Hoxie tendering his resignation as both General Transportation Agent and Assistant Superintendent. He said he did not want to stay on the road unless it was satisfactory to all parties. The Independent action of Mr. Snyder

and Hoxie and the high ground they took made a great impression upon the Government Directors and they insisted upon their retention. This was about the first time they had taken a stand in these matters; they generally followed whatever the Company desired. This was rather a surprise to the Company, and they evidently saw there was a new factor in all these questions.

Mr. Jesse L. Williams who had been very prominent as an able Government Director and as engineer, had been giving most of his attention to the bridges across the Missouri River, but he was very active in supporting me in my position.

Col. Hudnutt arrived on February 10th and I placed him in charge of the surveys for the bridge across the Missouri River.

On February 14th, ¹⁸⁶⁸ I wrote both Mr. Snyder and Mr. Hoxie giving them a full account of my meeting of the Board in New York and the results; also gave them full instructions as to the policy they should pursue and the efforts they should make to get along with everyone, not to criticize, but to adapt themselves to the positions they found; I thought this would avoid a good deal of friction in New York. Everything they said was repeated in New York, and had a different phase from what was expected. My letter to them was as follows: Said to be on page 103. can't find it

Upon receipt of this letter, Mr. Snyder sent me the following letter:

Omaha, February 22, 1868.

"I wrote you a long letter this evening without knowing the result of yesterday's meeting in New York. I now place in your hands my resignation as Supt of the road. I take this course for the reason that I wish you to be relieved of all anxiety or responsibility in my department and am not willing that you should jeopardise your own interests in trying to defend me.

I have always believed that my appointment as Supt. was owing to your kind efforts, and I know that you have been my firm supporter since. I can assure you, General, that I am deeply grateful for the confidence you have manifested and that I have endeavored not to abuse it. I can leave the road with clean hands and with the satisfaction that I have tried to perform my duty."

The Western Union Telegraph Co. had made a proposition to the Company to build, own and control our telegraph business and I wrote Mr.

Oliver Ames my views as follows:

February 15, 1868.

"I submit my remarks on the application of the W. U. T. Co. referred to me. Taking up this proposition by sections. Section 1- They propose to give us \$15,000 a year for use of our poles, etc. which is ten per cent on cost of line. 2nd. Objection--that now it costs us nothing to keep up repairs as we have division men on every six miles, whose duty it is to repair wire when down and we do not have to add to their number or expense to take care of line. It is very objectionable to allow any but one but section men to handle hand-cars.

The W. U. T. Co. must put wire on or along our road and all their operators, repairers, etc would have to travel our road, pay fare... &c. is quite a saving, also batteries. 4th. We obtain instruments now at same price they would be furnished at, so we make nothing in that. At all stations now, our depot agents are our operators, and we only have separate operators at important points, while we would under all circumstances be obliged to have an operator in a separate office, now our telegraphing costs nothing for operators at small stations. It is very objectionable to have commercial business and railroad business coming into same office and further it is objectionable that any one should have knowledge of our business except our own employees. But the great and fatal objections to this clause is that we give up the right to do commercial business for which we now receive sufficient to pay all the expenses of our offices and operators and further we are cutt off of the large amount of Government business that is necessarily done over our wires which we receive pay for and which goes to interest on our bonds, and it costs nothing extra to do all this business. For this what we get in return is a nominal sum as the costly part of our telegraphing is now done and hereafter it will be much lighter and we can make arrangements any time to do our eastern business over any line we will furnish repairs and telegraph wires free.

I do not believe we could agree to give the exclusive privilege of building a line along side of us or what amounts to the same thing, The private family dispatches of officers of companys would be no benefit to us. It is also objectionable to have an operator doing other companys business, they must be entirely under our control in all matters or we should soon come in conflict on right of service and authority. The telegraph Co. would only allow this at a point where receipts would not amount to the salary of an operator.

We concede the right of telegraph Co's. to build lines along our road. I see no advantage they have over us in local business. We under no circumstances would be apt to get any business except Government and that pertaining to business along our line and any business going farther than we control the line.

They must take, or if we could arrange to send it through by some one of the company controlling at Council Bluffs. I hold in telegraphing at 1/2 rate is now advantageous we would carry over our

The Western Union T. Co.

line, material, men &c. of theirs at 1/2 rate that would fully pay us that amount.

Financially I cannot agree that advantages are on our side, for this reason: We give up all Government and Commercial business.

We give up room and office rent.

We carry all repairs free.

We build the line at extra cost and furnish our own wire.

We furnish operators to them at such points as they cannot get paying business, they to us at points that it does pay.

We have to pay for repairs on our wire that would cost no additional expense.

We give exclusive rights to that company to build along our railroad line or practically that.

We carry their freight at 1/2 rate.

And for all that we receive the right to send messages east at 1/2 rates and get \$15,000 a year.

We will soon have to stretch our wire exclusive for R. R. business and another for commercial local business along our road. And it is often necessary for us to allow patrons to telegraph free over our lines on business we are interested in and relating to the freights, &c.

If the Co. desire to make an agreement, this would be fair--

For use of our poles and offices, and operators when they had none \$15,000. They to have separate office at all important points such as Omaha North Platte, Cheyenne, 1/2 of all commercial receipts going over our wire to go to each company. When wire is down each Co. to use the other but not to injury of our train dispatchers. Repairers, to go free. Freight at 1/2 rates. All Government business going over the wires.

All messages of our Co. and its officers over the wires east and west to be free. They to do our business at points where they have offices, exclusive right to route as above.

I was two years ago anxious and willing to make an agreement with W.U.T.Co. and believe perhaps it would be better now but one great expense in telegraphing is building. The road is now over and we are in a country where we can stretch our wire this year to Salt Lake without extra cost. Another advantage the W. U. Tel. Co. is a strong Co. and I desire to see our Co. in harmony with them, but our Superintendent, Mr. Snyder who virtually uses and controls the telegraph is very strongly opposed to it; holds we are making more money, saving troubles, conflicts, &c. by being independent, when we take into consideration the way we repair and run our line, we would save very little in this agreement or even the one I proposed.

I endeavored to make a temporary agreement with the Co. last year but the officers in New York did not ratify it and the matter now rests as then, an open question. I recommend that some agreement be made in relation to carrying their repairs, office material, &c. on their own line and then taking messages, train &c. as there is no real necessity for conflict; also if their wires get down they could at some hours of the 24 use our wires. I further recommend that before any agreement is made, their proposition be submitted to Mr. Snyder, asking for his opinion and his plan for an agreement between the two Co's. I would also appoint a subcommittee as requested by them, a mutual discussion may bring about different views and results from what I came to."

On February 16th, ¹⁸⁶⁸ I received a letter from Mr. Hodges who had arrived in Omaha, and who was to be in charge of the parties west of Salt Lake. He enclosed an extract from a letter received from I. Ives of the C. P. R. R. Engineers. Mr. Ives said that Stevenson made some examinations of the country between Bear Creek Valley and Salt Lake and found no lines practical except by way of Blacksmith Fork; that he was obliged to leave the work sooner on account of heavy snow storms.

Mr. Hodges had made a reconnoissance over this country a year before and Mr. Ives claimed it was thirty miles shorter than the line by Echo.

I concluded to make an instrumental survey of this line and so instructed Blickensderfer. This information was a clear indication to me that the Central Pacific people intended, if possible, to build East of Ogden.

On February 22nd, ¹⁸⁶⁸ Mr. Snyder sent me the items making a total of \$509,542.38 charged to construction, April 1st to December 31st. This was to finish up construction work which the contractors had not completed and was mostly in putting our bridges in the Lodge Pole Creek Valley in the proper condition for use.

When I was in command of the Department of the Missouri, I located the post of Ft. Sanders, where I thought the railroad would pass very near and I made a reservation there of ten ^{sq. mi.} of ground. When we came to make our surveys, our line passed through this reservation. We established the town of Laramie City on a portion of this reservation. I had no idea the Government would make any objection to our occupying the reservation but the officers at Fort Sanders reported the fact that we were locating the line and building it through the reservation and it brought orders from the War Department in relation to it and on February 21st, I wrote a request to General Wm. T. Sherman to be allowed to go on the reservation until proper authority from the War Department was obtained.

On March 3rd, ¹⁸⁶⁸ General Sherman wrote me the following letter in relation to ~~the~~ subject which I had laid before him:

St. Louis.

"I got your dispatch last night and have answered it, and have sent to Gen. Augur one in general terms to facilitate the progress of the road by conceding the use of ground near Ft. Sanders for depot, &c. But what you want is a permanent title, not that mere temporary use that we are empowered to grant.

I advise you to cause the most accurate plat to be made that you can, and delineate thereon the ground you want, with its metes and bounds, and what part of it is included within our Ft. Sanders reservation. Then in the name of your company make an application for the indefinite use of the space delineated or for an absolute title. This paper should go to the Secretary of War, who would properly send it down through General Grant and myself, to General Augur, the Department commander, all of whom would doubtless recommend the grant provided the depot, as you say, be as far off from the posts as two miles.

In case the land has been publicly dedicated to use as a military reservation, an Act. of Congress might be necessary to convey it to you, but, as the public land surveys have not yet reached the Laramie Plains, I take it that our occupation of that reservation can be limited by a simple order of the Secretary of War, so as to leave the Railroad company the right of selection, under the Bill you showed me in Washington this winter.

I would not be willing to order the modification of the limits of a reservation, after the map has been made and filed in the War Department, as I believe is the case with the reservation in question, but I would not hesitate to grant you the right of way, and the use of any reasonable part of the reservation for side track and depots, but my grant would only be temporary, and could be modified, altered, or annulled by my successors in office or by higher authority.

In a similar case, at Fort Riley, Congress granted twenty acres for depot within the reserve, and a fractional section on its western edge."

On the same date I received a letter from Gen. John Gibbon, who was in command at Fort Sanders. General Gibbon took a great interest in the road and did everything he could to aid us:

Ft. Sanders.

"I send you a copy of an endorsement I have just made on a letter from U. S. Coms. Barlett at Cheyenne, in reference to the destruction of liquor in this vicinity; the Interior Department having decided that this is not Indian country, but public lands of the U.S.

Frequent complaints have been received from your R.R. people that these whiskey sellers squat along the line of the road, make their hands drunk and interfere terribly with their work. I have always on these complaints sent and destroyed the whiskey and in some cases arrested the sellers, but, if this is not Indian country, the law will not support me and I shall have to stop it. Would it not be a good idea to provide ~~that~~ by law that until your track is laid the provisions of Sec. 20 of the Act. Appd. Feb. 13, 1862 shall apply to all public lands beyond the limits of duly organized towns, and within the limits of the R.R. grant 20 miles on each side the line. Without some such provision, I am afraid your work for the next year will be sadly interfered with.

Laramie City is all laid out and people are waiting anxiously to buy, but we have to wait the action of the War Department in regard to placing it on the military reservation."

In answer to General Sherman, I wrote as follows:

Washington, March 6, 1868.

"I will have a map made as you suggest, but you do not fully understand my request. All I ask is that we be allowed to go on to the reservation a mile square of it, not that you shall relinquish any portion that government has, or to give us any title whatever, only the right to occupy it and land title to be settled hereafter when surveys are made. The depot is 1 1/2 to 2 miles north of the post proper. Now what I hold is this. 1st. That our line was filed in June 1865, in Dept. of Interior as required by law, passing through and over what is now a portion of Fort Sanders Reservation, see our charter that gives us prior title.

2nd. In 1866, I made the surveys and moved the Fort (as commander of that country) from the Forks of the Laramie to its present location to bring it where I knew our road would be built so as to have it adjacent to the road. 3rd. The reservation has only the order of the Dept. Commander has been twice cut down by such orders and has no existence here either by order of Sec. of War or by Act. of Congress and the power that made it can abandon it, curtail it or give any privilege on it that they deem best, that is not in conflict with law.

4th. When preliminary surveys are made, our depot may fall on odd sections, if so, then it will fall to us by the present Pacific R.R. Act, if not, it will fall to us by the Act we are now putting through Congress.

5th. It is impossible now to get any question raised or any decision made here and I had to apply to you in order that our people could go on and lay out their towns build the depots, our ware-houses, and prepare to make that our temporary depot west of the mountains. As soon as matters get settled, I will bring the question before the War Dept. if you consider it necessary, but I see no necessity for it, as it has no existence in law and the order establishing it so far as I can learn reaches no higher than a Dept. commander. You know better than I whether the Sec. of War ever reorganized or confirmed the reservation. Whether he did or not, our right under law has and takes priority, but we want only enough to do our business and accommodate the people who may settle at that point.

Gen. Sherman's letter gave the authority to go on the reservation, and following his suggestion, I wrote the Sec. of War, the Hon. E. M. Stanton as follows; from Washington:

"The Union Pacific Railroad Company filed their map showing their line, under the law, and occupied the ground upon which the military reservation of Fort Sanders is now located in 1863 and 1865. That reservation of Fort Sanders was made by my order in 1866 when commander of the District of the Plains. It is a temporary reservation, not established by law, and requires only the order of the Department Commander to release it, and has been cut down once or twice by order of the Department commander since established. The depot grounds at the west base of the mountains are located on this reservation some one and a half or two miles north of the post of Fort Sanders. They were located on this reservation for the reason that the grades, grounds, water, &c. there are more suitable than at any other point in that vicinity for a depot.

I adopted them after consultation with Generals Augur and Sherman who fully understood the question, and preferred this location as being most beneficial to the government, as well as to the commander of the district. Gen. J. E. Gibbon deems an order necessary from his superior officer that he may allow the company to enter upon that portion of the reservation selected for the depot. We were not aware of this until we had entered the grounds, and we ask that such an order be given. We prefer to be on a military reservation until civil law is established in that country for the protection of our property and the people connected with our enterprise. In my opinion the order can be properly given by the department commander, but as the papers have reached you, I now prefer that the decision be made by you."

This letter brought the necessary orders from the Secretary of war and we had no further difficulty in the matter.

Mr. Elickensderfer arrived in Omaha on February 22nd with eight Assistants and proceeded immediately West for his work.

On February 29th, ¹⁸⁶⁸ Col. J. O. Hudnutt with forty men arrived at Ft. Sanders to go to work under Mr. Evans. I had to send additional forces to Evans to insure the location of the lines from Fort Sanders to Green River in four to six weeks in order that the construction company would not be able to find any fault if the line was not ready for them, and I therefore transferred Hudnutt from his work on the Missouri River Bridge temporarily to Evans.

On February 25th, ¹⁸⁶⁸ I wrote Mr. House to send parties to Cheyenne and have them make surveys for taking the water out of Lodge Pole Creek and Crow Creek and take it back of Cheyenne, so as to supply the surrounding country, town and our shops. It was very important to get a supply of water at this center as it was not only the important point for our shops but the indications were that it would be a very important city in Wyoming and the water question was going to be a very serious one.

On March 3rd ¹⁸⁶⁸ I received a letter from President M. L. Sykes of the North-western Road asking me to consider the question of bridging the Missouri River temporarily with a Pontoon bridge; He said that my personal knowledge and experience with pontoon bridges during the Civil War would have great weight in the considering of the practicability and desirableness of such a work. I disapproved it on account of the changing ^{sands} ~~currents~~ in the Missouri and the difficulty of holding any bridge at any landing at those times and also the difficulty of anchoring a bridge in a strong current. The anchors we generally used would not hold in the quick sands. I thought that until we could get a permanent bridge, during the summer a ferry would accommodate everything and in the winter we could renew our pile bridge in the ice and it would answer every purpose for the present.

On March 6th, ¹⁸⁶⁸ I received a letter from James A. Evans stating that on that date he, with two parties, (Hudnutt and O'Neil) started out, without escort, the military being behind waiting for transportation. He said there were Indians in the vicinity of the Platte which would force him to bunch the parties for protection until the escort joined them. Laramie City has been laid out for weeks, people waiting anxiously to buy lots. \$20,000 could be realized if they could sell but no orders from the War Department giving them the right. The grading to the Laramie River will be finished by May 1st."

On March 6th, ¹⁸⁶⁸ I wrote Mr. Oliver Ames upon the lines to be surveyed during 1868 and located, as follows:

Washington.
"I submit herewith profile and map showing the general route of the U.P.R.R. line which I recommend for adoption and location. As I shall in my general report go fully into a discussion of the several lines run by us the past year, I will confine myself in this preliminary report to a short description of the several main lines run, and endeavor to show the reason the company should adopt for location the line recommended.

From Ft. Sanders to Medicine Bow ~~River~~ the line located is so far superior to all others that no argument is needed to recommend its adoption and there can be no question as to the route. The line from Fort Sanders west follows the Valley and table lands adjacent to the Big Laramie River to Station miles north west of Fort Sanders; it then crosses in the lowest place in divide between Big Laramie River and Rock Creek to valley of Rock Creek which follows either in valley or on table to the Medicine Bow River crossing near mouth of Rock Creek in Lat. 41° 54'.

From Medicine Bow River to Bitter Creek Plains, three general lines were surveyed. 1st. The line run by Mr. Brown and finally located by Mr. Maxwell, follow Medicine Bow Valley about 8 miles and then climbs by valley and slope of a small tributary of Medicine Bow River to summit of Rattlesnake Hills at Browns Pass. Lat 41° 50' making the highest elevation between the Medicine Bow Crossing and North Fork of Platte it then follows the valley of Marys Creek, ^{to the North Platte River} no grade on this line exceeds 65 ft. per mile, and it passes the West range of Rattlesnake Hills without any great difficulty canoning the stream at or near the three prominent peaks in the West Rattlesnake range. 2nd. The line run and located by Mr. Maxwell which leaves the Medicine Bow Valley 8 miles west of Rock Creek, crossing the Rattlesnake Hills five miles north of Browns summit, in a pass some 300 ft. lower, then descends by Martha's Creek to North Platte reaching the Valley of that stream 8 miles above mouth of Medicine Bow, where it encounters costly work and heavy grades in getting down into the valley of the Platte, and then down Platte to reach a valley up which it must run to obtain a feasible line to overcome the summit of the West range of Rattlesnake Hills. It passes that range through what is known as Sandy Gap in about lat. 42° 03' and then descends to Bitter Creek Plains at the Red Buttes Spring near the stage Road, Lat. 42° 53' ~~Buttes Spring~~.

One objection to this line is the extra summit to overcome passing the West range of the Rattlesnake Hills it's heavy work at crossing of North Fork of Platte. The grades from Medicine Bow and near North Platte on the line do not exceed 30 ft. but the maximum grades crossing west range of Rattlesnake Hills are 85 ft. to mile with considerable heavy work.

3rd. The third line is Mr. Bates, from the mouth of Rock Creek down valley of Medicine Bow to its junction with Maxwell's line in valley of North Platte, thence to Red Buttes Springs by the sandy Gap Pass. This line avoids the summit of East range of Rattlesnake Hills made by Maxwell and Brown; it being in the valley of Medicine Bow all the way to its mouth, but has to overcome the west range of Rattlesnake Hills by same route and grade as Maxwell's line.

The grades down the Medicine Bow are light, 8 to 20 ft. per mile, but the valley is very narrow and crooked requiring great curvature, very expensive, rock work with large amount of bridging; the Medicine Bow River having to be crossed often. This line will give great trouble in winter from drifting snow, the snow of the Rattlesnake range blowing into and filling the narrow gorges encountered in getting down the Medicine Bow Valley. It will also be a difficult and expensive line to keep up on account of high water and great number of bridges.

4th. So many lines were run from North Fork of Platte and Bitter Creek Plains developing that entire and unknown country that it is hardly worth while to describe all of them. There were two general lines run, one by Messrs. Brown, Appleton and Morgan and one by Mr. Bates as a base for all others; to these I will confine my remarks.

1st. Browns line from North Fork of Platte at his crossing of same near mouth of Marys Creek, five miles north of Pass Creek, lat. $41^{\circ}48'$ then following a valley almost due west by Rawlings Spring, Duffs Peak &c. and reaching the divide of the continent at Dodge's summit. Lat. $41^{\circ}52'$, and then descends to Red or Dodges Basin, crossing the Basin just north of Clay Buttes, then rises to the summit of the Western rim of the basin and descends gradually entering Bitter Creek Valley near Ponds Station; it there follows the valley of Bitter Creek to Green River. This line is very direct, has only 50 miles without living water in streams or springs. Its grades are not to exceed 60 ft. to the mile with light work. It will be free from obstructions from snow if properly located and built than any other line.

2nd. The line from Red Butte Springs, lat $42^{\circ}03'$ to Green River at mouth of Big Sandy River run by Mr. Bates has good direction but 150 miles of the line is without living or running water, the parties who made the survey being dependent upon lakes and standing ponds of water as their only supply.

The maximum grade is 80 ft. Mr. Bates thinks this may be reduced but the lack of water on this line induced me to abandon it and seek an outlet from it to Bitter Creek which was done and a good line connecting it with Browns line in Reeds Basin can be had. I have made a rough comparison of the lines from the preliminary surveys which show the following data and results:

1st. By Medicine Bow Valley crossing Platte at mouth of that stream, No. 1.

2nd. By the Maxwell line crossing Platte near mouth of Medicine Bow River, No. 2.

3rd. By Browns Summit, crossing Platte about 5 miles below mouth of Pass Creek, No. 3.

We will ask that No. 1 and 2 connect with No. 3. at most available point. We will then have distance as follows;

No. 1. 154.5 miles.

No. 2. 159.75 "

No. 3. 139.8 "

	Elevation	Depression.
No. 1	1532 ft.	1296 ft.
No. 2.	1880 "	1644 "
No. 3	2060 "	1824 "

	Maximum Grades.
No. 1	85 ft. to mile.
No. 2	85 " " "
No. 3	65 " " "

It will therefore be seen that the shortest No. 3. line has the lowest maximum grade and greatest amount of elevation and depression, the line by way of Medicine Bow River Valley has the least amount of undulation but is nearly 15 miles longer and is at least three times the curvature and by far the greatest cost, as well as the greatest difficulty in construction. The shortest line, all things considered, shows the best and my personal examination of the country sustains the conclusions deduced from the surveys.

The country between Dodges Summit and Bitter Creek, I prefer to further examination before making a final location and I recommend from what the preliminary surveys has developed, the adoption by the company of the following general route for final location from Ft. Sanders to Green River, viz: From Fort Sanders up the valley of the Big Laramie River and Black Creek to the crossing of Medicine Bow near lat. $41^{\circ}54'$ then over the line crossing the east range of Rattlesnake Hills at Browns Pass, Lat. $41^{\circ}54'$ then down Marys Creek Valley canoning through west range of Rattlesnake Hills at Mts. Lettie, Ella and Little Annie crossing North Fork Of Platte in lat $41^{\circ}46'$ then west by Rawlings Spings and Duff Peak to divide of continent at Dodges summit lat about $41^{\circ}52'$ then to Bitter Creek Valley near Big Pond Station and then down valley of Bitter Creek to Green River and

in the comparison as No. 3.

I recommend the adoption of this line because the surveys show it to be the shortest most direct, has the lowest maximum grades, less curvature, less heavy work. is better supplied with water and coal, and is less liable to obstruction from snow, and is nearest to timber and other material required in its construction than any other line."

On March 5th, I wrote Mr. Snyder as follows in regard to work being done:

"I do not understand your construction account as you do
1st. Under the contract the Co. retain for the contracts \$75000 per mile for shops, machinery and equipment. In my estimate I credit the contractor with the cost of all equipments, station houses, shops, tools, &c. that they put on the road. Therefore I cannot charge them in addition to the \$75000 per mile. These items you return, viz:

New tools and machinery	\$31,797.81.
Equipments	270,859.45.
Mo. River Bridge which clearly belongs to us	7,719.97.

It is proper for you to charge this up to construction acct. and keep separate account of it as the \$75000 per mile retained by Co. is to pay for it, but it is not proper for me to charge items and \$7500 per mile. The items that I hold it is proper for you to charge up as you return them in addition to the \$75000 per mile are

of track	77,881.51.
New Bridges	20,319.95.
Engineering	704.92.
Freight Expenses (What are they?)	5,024.39.
	<u>108,930.77.</u>

Mr. House has the contract; also copy of my estimate look at it and see if you agree with me."

On March 7th, ¹⁸⁶⁸ Mr. Blickensderfer wrote me from Salt Lake that he had arrived there. While there was very little snow in the Valley, the Wastach was covered with snow, generally about three feet deep. In some places the snow reached the top of the telegraph poles and they had to come over from Bridger on sledges.

On March 8th ¹⁸⁶⁸ Mr. Snyder wrote from Cheyenne that they were snow bound and that this was the first snow storm of any account during the winter. He also notified me that Reed had official notice from New York ^{of appointment} of Pean, whom he had discharged from the road as Master of Transportation, for the contractors and said if the Directors considered this fair play, then he did not know what fair play was. At that time, they had 85 miles of iron at Cheyenne and 55 at Omaha and the Dale Creek Bridge timber had not then all arrived on the West side of the Missouri but all that had been received was on the ground at the Creek. The Dale Creek Bridge was a ^{1400 ft. long and} structure 125 ft. high and we were pushing the construction of this bridge so as not to delay the track layers. When completed, this bridge was a fine structure.

On March 8th, ¹⁸⁶⁸ I also received the following letter from Mr. Oliver Ames:

North Easton.

"I see by the papers that the Indians are troubling the miners in the Sweet Water region, and they may be able to give us serious trouble. Just so soon as any apprehension of danger shall exist among our engineers, trackmen or graders it will greatly embarrass our operations. To prevent this Government should immediately send an efficient force into the country and see that our line is thoroughly protected.

We shall have our men, graders, this season scattered over three or four hundred miles of your located line, and they must of necessity have a large Government force to afford the full protection that our men need. It is economy for the Government to do this now effectually. Let there be a sense of security established and large settlements like Cheyenne will be established along the line of the road, and will give all the protection needed in two years without cost to Government. I hope you will press upon the attention of Government the importance of their interest and ours of having our line fully guarded.

We are having in New England a thaw that is carrying off all the snow and no prospect of a freshet, and if it shall operate in the same way in Nebraska, we shall have no damage to our track to interrupt the operations of the road. The loss of the bridge at Omaha so early disappointed us as we hoped to get over 150 miles of iron before the river broke up.

I suppose Blickensderfer is out on the line, and hope the recent storm at Cheyenne has not interrupted his operations."

1868

On March 9th, Mr. J. E. House, under my instructions, had made up an estimate of the actual cost of the road from the 100th meridian to the 600th mile post. When Mr. House applied to the Superintendent of ^{construction} ~~contracts~~ for the cost of their work, they failed to give it to him, giving him to understand that we were not supposed to know what the road cost the contractors, no more than any outside party. As this was a change of the policy of the company, I immediately asked information in relation to it and how they expected me to make an estimate of the actual cost of their road under their instructions without obtaining the actual figures from the construction contractors. They did not make a direct answer to me but indicated that I should make them from my own estimates, as I had sufficient information ~~as to prices~~ and my estimate of quantities could be furnished and then they would compare them later with the actual estimates of the construction force. They seemed to want my estimates made from the located line as a check on the contractors estimates. ^{ing} ~~Notwithstanding~~ the decision of the company, I was able at all times, through Mr. Reed and the Division engineers, to obtain this information myself; while they did not like to give it to subordinates, they were always ready to give it to me, confidentially.

Note
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1868

On March 9th I received the following letter from Mr. Ames in relation to the bridge question: Boston.

"Your favor of the 5th inst. is received. The Bridge question is greatly distressing the Omaha people, and they are doing every possible thing to fix the location at Omaha. The speech of Joy before the Committee was very clear on the Omaha question, and I see no way to fix the Bridge at that locality but for them to put through a track on the Dey line; that will be as easy grades as we now have. The shorter distance would enable us to put on engines to help trains over the first grade. I proposed to the Omaha committee that if they would put through the Dey line, cutting it down to say a 40 ft. maximum grade, I would do what I could to favor their line and I think the whole committee would take the same view. There is no question but what Omaha would be damaged double the cost of a satisfactory line ^{outside} the original Dey location.

In regard to the Oregon branch; we had a letter and pamphlet containing the proceedings of a meeting at Portland, Oregon, favoring a connection with our road. I wrote them that I would lay their matter before directors at our next meeting, and a committee would probably be appointed to take their case into consideration.

I am glad to see that your engineers have started out. We want our location to be ahead of the graders enough not to be delayed. We have decided to get a lot of power drills to force our work along, and if we have any tunnelling, to do we cannot get too early on it."

I had been urging General Sherman to make decision upon the question at Ft. Sanders and on March 11th he wrote me as follows:

St. Louis.

"I have your letter of March 6th and the report for which I am much obliged. Gen. Augur, to whom I telegraphed on the subject of the reserve at Ft. Sanders, answered:

"No trouble at Sanders about location of road or a mere depot. What is wanted there is part of the reserve for town; will write concerning it." I have also his letter to the same effect. I want you to understand that both Augur and I are more than friendly to your great enterprise but, of course, don't want to plant a dirty little town right along side of our military posts. As soon as I see the surveys I will approve of any restriction of the reservation that will be reasonably fair to the Post of Sanders.

What I want is to know the ground that we do own, so that we may not commit the folly of improving for the benefit of your company or ranches. If your location was prior to ours, and you have a legal right to the site of the fort, we should naturally trade off with you, viz: by relinquishing one section, to get your guarantee for ours.

I think a map has been filed, but I will instruct Gen. Augur to grant a liberal ground contiguous to the road as he can consistent with a due regard to the rights of the United States."

On March 13th, ¹⁸⁶⁸ Mr. Ames enclosed me the following letter.

giving the action of the Board of Directors:

North Easton, Mass.
"Resolved: That the Vice President be appointed the General Agent of this road with power to assent to a change of the grades and location of the road, as provided in the contract with Ames, and do all other things necessary to expedite the construction of the road and telegraph in connection with the contractors.

In passing the above resolution it was understood that the power conferred applied only to the road under construction and was not to give power over the Chief engineer or his parties in their location of the road. I understand this to be as heretofore; you are to locate the road and give us the location. The Board of Directors would have power to accept or reject the location.

We have a committee on location and construction who last year took charge of the location and construction. That Committee this year have undoubtedly the power of location, but the construction has been put out to contractors. The location is in the Board of Directors and by them conferred upon the Committee.

I hope you will not consider this assumption of authority by Durant as a final settlement of this question. If he could by these annoying exhibitions of his peculiar character drive us all out of the road, he would do it, but I don't intend to be driven out or coaxed out, but will adhere to the strict interpretation of the Resolution, and if he abuses the power we must repeal the resolution conferring it."

Upon receipt of this resolution, I could see that Durant was again obtaining the power which he had been deprived of during his absence in Europe and since his being relieved of the control of the construction matters had moved along very smoothly, but I saw that this meant trouble and that it also meant that I would also have to fight to maintain my lines and perhaps another demoralization of

the forces. I immediately answered Mr. Ames' letter and told him that a great mistake had been made; that it would not be a month before Mr. Durant would be changing things all along the lines and it would bring on a conflict with the Government as I would not stand for any changes which were made for the purpose of saving work and hurt the commercial value of the road; that the Government depended upon me to see that the road was located and was accepted by them as built, and that Mr. Durant, nor the Company, had any right to change these lines after we had submitted our maps and profiles to the Government. I saw the hand of Seymour was also in this work.

On March 13th, ¹⁸⁶⁸ I received the following letter from Mr. Blicksenderfer giving me the distribution of his forces as follows:

"During the early part of this week we had rather pleasant weather here, but yesterday and last night there was quite a snow storm, and this morning the snow covers the entire valley several inches in depth. This afternoon, however, the indications are for fair weather again, and I hope the snow will soon disappear.

In considering what disposition to make of the parties, I have decided to try to get one of them (Mr. Morris) over to Green River and Bitter Creek. How we shall succeed in getting over the snow in the Wahsatch, I do not know. I endeavored to get two teams from the Qr. Mr. Dept. at Bridger, but failed entirely, so we must get them over from here or wait until the snow disappears. Capt. Bates I have directed to work in Weber Valley, where I think we can get along. If Morris cannot get over the snow I will put him to work as far up the Weber as the snow will allow, and let him work up as the snow disappears until he can get over.

Hodges I have directed to proceed to Box Elder, and work his way eastward from there across the Wahsatch to Bear River, as fast as the snow will let him, to examine definitely whether a line can be got through from Hams Fork via Cache Valley and Box Elder, as there seems to be some prospect that way, and the previous examinations do not seem to have fully settled the matter.

I hope in this way to have the line from bitter Creek to Black's Fork and the different parts of Weber Valley located and the character of the line from Ham's Fork to Box Elder settled by the time the snow gets out of the way on the line from Bridger to Echo, and then concentrate the forces of the final locations of that part of the line. The parties have all had their instructions for several days and we are organizing. I think early next week will see some of them off, and the balance will soon follow."

On March 15th ¹⁸⁶⁸ I received a letter from Mr. Reed from Cheyenne in which he says:

"We are doing well in the heavy rock excavation over the mountains. If we have good weather but little will be left April 1st. Dale Creek Bridge is being pushed rapidly. I am laying track slowly, expecting to get to the Bridge as soon as finished.

Whiskey, thieves and robbers trouble us seriously."

1868
On March 6th, I placed Mr. J. G. Webster in charge of repairs by the following letter. Mr. Webster was my chief in 1852 when we were on the Rock Island R.R. under Mr. Peter A. Dey and I knew him to be able, honest and could not be influenced by any one against his judgment:

Washington:

"You are assigned to duty on U.P.R.R. as Engineer in charge of repairs and with the charge of all the engineering on the part of the road built and run by the company. You will consult with Mr. Snyder the Supt. of road and in all matters relating to repairs of the road give him such aid and propose such work as will properly pertain to the engineering department. You understand pretty fully my view in the matter and so far as I am concerned, leave these instructions in the main with Mr. Snyder. Mr. J. E. House, Div. Engr. Omaha will turn over to you the party now on repairs and engineering and give you all the information necessary."

1868
On March 6th, Mr. W. B. Shattuck who was writing up the Union Pacific Railroad, wrote me for a description of the route west of the Black Hills and I answered him as follows:

Washington, March 8-1868

"From Big Laramie river the road runs down the valley of the Big Laramie with only the natural grades of the fall of the valley, 15 miles west of the Big Laramie it crosses the Little Laramie with a truss bridge 250 ft. long. Then following the Big Laramie it crosses the Little Laramie rising with 40 ft. grade to the summit, between the Big Laramie and Rock Creek it follows that valley or its adjacent table lands and crossing the Medicine Bow near mouth of Rock Creek in Lat. $41^{\circ} 54'$, 72 miles from Fort Sanders and 632 miles from Missouri River. Following down the valley of the Medicine Bow 8 miles it begins to ascend the East range of the Rattlesnake Hills on a ridge, a spur of the main range of the most prominent peak of the Medicine Bow Mountains, Elk Mountain. The line ascends to Browns pass of the Rattlesnake Range by following the valley and slopes of a tributary of the Medicine Bow River and crosses the summit in Lat. $41^{\circ} 50'$ with an elevation above the sea of 7124 ft. and descends to the North Fork of the Platte River by a tributary of that stream known as Mary's Creek. The ascent to the Pass is made with no grade to exceed 65 ft. to mile and descent with 50. In descending to North Fork of Platte, the road passes the West range of Rattlesnake Hills by following the canons, then around the ranges with elevation necessary to overcome that region ~~and undulating grades~~.

The road passes the canon near the Peaks, Lettie, Ella and Little Annie, the three most prominent peaks of that range.

It crosses the north fork of Platte river with a 650 ft. Howe Truss Bridge, stone abutments and piers is in lat. $41^{\circ} 46'$ five miles north of mouth of Pass Creek, elevation of North Fork Platte, 6486 ft.

From North Fork of Platte the road takes about due west course and commences ascending the main divide of the continent, it follows a succession of basins or depressions singular in formation and are independent basins without outlet for drainage.

Line passes Raslins springs, Duff's Peak, Separation Creek and reaches main divide of continent at Dodge's Pass 57 miles west of North Fork of Platte and 725.4 miles west of Missouri River elevation 7108.

The main divide of continent is a broad open plain extending from the Snowy Range on south to the South Pass on the north. at the point of the Wind River mountains the entire plain supports a luxurious growth of grass but is destitute of living water, now and then lakes and ponds occur in the succession of independent basins which has been passed in reaching the summit. Maximum grade ascending 65 ft. to mile, descending 60 ft. from summit.

from the summit the

west line commences descending rapidly into the Red Basin; it descends some 500 ft. passing Clay and Steamboat Buttes and again rapidly ascends to the summit of the western rim of Red's Basin and falls to Bitter Creek, entering the valley of Bitter Creek near Big Pond Station 780 miles west of Missouri River. We then follow the valley of Bitter Creek to Green River 61 miles and cross it at mouth of Bitter Creek 841 miles west of Missouri River. The bridge over Green River will be 600 ft. long. Howe Truss, elevation of water at Green River 6092 ft. above sea.

From Green River line crosses to Black's Fork and follows that fine wide valley to the mouth of Muddy, up which it runs to the east rim of the Great Salt Lake Basin. We ascend this rim on the slopes of one of the tributaries of Big Muddy, reaching a ridge up which we climb 60 ft. to the mile to the summit 7567 ft. above the sea, descending gradually to Bear River and up Yellow Creek, we reach the summit of the Wahsatch Mountains at the head of Echo Canon, 6879 ft. above the sea, descending rapidly with a 90 ft. grade in heavy work, cutting through from one ravine to another with 700 ft. tunnel; the valley of Echo Canon is reached and followed to the Weber Valley down which we run through the cultivated Mormon farms canoning through one range at mouth of Lost Creek called the Narrows; 7 miles. We open out on to the broad table lands of the Weber Valley and soon strike Great Salt Lake Valley at the mouth of Weber Canon from here we skirt the Great Salt Lake 35 miles to Great Salt Lake City, 214 miles from Green River and 1055 miles from Missouri River, elevation of Great Salt Lake City 4245 feet above the sea."

1868
On March 19th, I received the following letter from Mr. T. C.

Durant:

New York.

" please forward to this office as early as practicable detailed copies of maps and profiles of the different routes run between Ft. Sanders and Great Salt Lake, over routes that may be regarded as competing for the final location; also a summary of the different lines showing their relative length, cost, maximum grades, &c. with such other characteristics as should be taken with consideration by the company in deciding upon the final location. Also copies of the reports of the division engineers for the year 1868, and your instructions to them for that year. Also names of division engineers employed at the present time, their assistants, salaries paid and copies of your instructions to them".

This was an indication of what his purpose was because all this data which was procurable at that time had been sent to the company. We had not yet located the line finally from Ft. Sanders west but the men were upon the location. I simply informed Mr. Durant that I had no duplicate copy of these reports but he would find them all the hands of the company. I sent a copy of Mr. Durant's letter and my answer to Mr. Ames. I also informed Mr. Durant that the line was definitely fixed upon Ft. Sanders to the North Platte; that the men were locating it and that any changes in the line would delay the work.

1868
On March 20th, I received a letter from Mr. James A. Evans
in which he says: North Fork of Platte.

"O'Neil is on the line east of Rattlesnake, and we are ready to commence location from North Platte West. I have arranged the work in the following manner: O'Neil locates to North Platte; Hudnutt from North Platte West. O'Neil on reaching Platte will double over either on to the divide or into Bitter Creek, according to the progress Hudnutt may make. Lawrence and Pampelly will go directly to La Cleda. Pampelly will work east with his party toward Dodge Summit in advance of Hudnutt, so as to develop country fully without delaying location. There is considerable snow here."

I answered him as follows: Washington.

"Push location. Indians will not trouble you for a month; get all parties to work on the ground; the company are pushing me. They want line to Bitter Creek as soon as possible. Answer."

1868
On the 20th I sent Mr. Blickensderfer the following:

Washington.
"Get location in at Green River, and head of Echo, as soon as possible. Company are starting forces out there. Then over rim of Basin and through narrows and Weber Canon; after that close gaps if you have plenty of help and men, put a new party running line north of lake over Promontory Point and across Bear River, arm of lake around Promontory Point so as to determine best line to locate curve."

I sent forward to Mr. House at Omaha, the request of Mr. Durant to furnish everything that had not already been furnished to the company.

1868
On March 22nd, in answer to my letter to him, Mr. Ames wrote me as follows: North Easton.

"Your favor of March 16th in reference to having your parties early in the field is received. I feel that you are all right in this matter, and we do not intend to have your lines interfered with. I did not think that the resolution authorizing the Dr. to change the grade and location with your assent would give him any power to disturb your lines, except in some cases where it might greatly expedite the construction of the road, and in this case Reed might change the line to get the road along.

I know that the Dr. is for assuming all the power whenever

he has a chance, but I trust that as this power was given solely for the purpose of advancing the road under this Ames contract and for this summer alone, you will not find it annoying.

The Directors meet this week and the Bridge question will come up, and I hope, be settled. Omaha is making a great struggle for it there, and may get it if her offers are liberal."

1868

On March 24th, Mr. Blickensderfer wrote from Salt Lake as follows:

"I regret to be obliged to report that we had a severe storm yesterday and last night, and this morning I measured 4 1-4 inches snow on a level here in the city. The whole country is covered and I fear in the mountains the fall has been quite heavy. The weather for the week previous to yesterday had been pleasant, and I hoped the roads would soon be good and our parties able to work, but this will set us back."

1868

On March 26th, Mr. Snyder wrote as follows: Omaha.

"We are snow-bound between Pine Bluff and Cheyenne, but will work out of it by tomorrow morning. Storm has ceased and we have three hundred men shoveling. I fear the storm may interfere with work at Dale Creek, as in the mountains it was reported as terrific.

The Dale Creek bridge business has been managed like many other parts of construction and still drags.

Everybody here appears to be crazy on the Bridge question. Our news all comes from outsiders. Omaha wants it at Telegraph Pole because that will be likely to make general transfer on this side of the river. The location at the Train Table, will, in my opinion, make the general transfer on the Iowa side. There is not room enough here. We all want to see a high bridge. My experience at Rock Island was sufficient to convince me that a draw, even in a stream where the channel never changes, is not profitable or safe. Mr. Durant is here. I gave him my opinion freely in matters, which coincided with your own."

1868

On March 26th, I heard from Mr. Case's survey of the lines from Denver to Cheyennes. They still had up the question of the road near the mountains and that in the valley. I had expressed my opinion and Mr. Pierce, who then had charge of the work for the Denver people was also of my opinion. They were waiting for a traffic contract with the Union Pacific which I had drawn and sent East for approval. Gov. Evans was East raising money for this branch and they were ready to commence work upon it. As the work only averaged three or four thousand ^{to the mile} ~~miles to the~~ cubic yard on the North Platte line, I was satisfied they would adopt that.

In March, Mr. Washburn, in the House of Representatives, made a very strong speech against the Union Pacific Railway, quoting one John Richly of Columbus, Nebraska. I sent this speech of Mr. Washburn's to Mr. Snyder and he made answer as follows:

Omaha.

"The Columbus correspondent is John Richly, as notoriously dishonest as any man who ever crossed the Missouri. His statement that freight is handled by wagon from Omaha to Columbus or any other point on the line of this road by wagon, or that it can be handled by wagon for rates charged by us is false. The old freighters fight us because the road has killed their business east of the mountains. Richly is an old nuisance whose trade has been taken from him by men of progress settling in Columbus and doing business on principles adapted to this generation. The location of the road adjacent to his land has made him easy financially but he is qualified for no better pursuit than keeping a ranch on the Powder River route, plundering pilgrims and selling whiskey to the Indians. We know John Richly.

I know that you replied to Washburn and gave Congress a better idea of this road and country than they ever had before. He talks wild. Of course, he knows nothing about the expense of operating a road in this country; that we have no fuel on the line of roads from North Platte to Pine Bluff at each of which places we have to pay \$12 per cord and transport by rail to all the stations intermediate; that all our coal is transported by rail from the Missouri River and costs \$10 per ton here for a comparatively poor quality; that we have Indians to guard against, making it necessary to employ many men to guard those that work on track repairs west of Kearney, and that owing to the probability of danger we have to pay more for laborers than is paid by any other road; that wages for mechanics and laborers of every description are higher here than else where, and supplies of all kinds cost more. Washburn is an old scold on railroads and in his previous attacks has been whipped and I think he will be this time.

"We are getting freight from St. Louis now for about all competing points in Colorado and New Mexico. Our prospects for business this season are excellent."

As soon as I got my data together, I answered Mr. Washburn's speech which was generally commented upon because I had the facts and Mr. Washburn talked from hear-say.

1868
On March 29th, Mr. Reed wrote me in relation to the progress and conditions of the work, as follows:

Cheyenne

"I will have the station ground graded at Laramie at once. I regret exceedingly that nothing can be done to suppress the whiskey traffic along the line. A few nights since two men in Carmichael's Camp were shot (badly wounded). Welch, a contractor, was robbed of \$1100, and nearly killed contiguous to a place on his work called Robbers Roost. One man was shot dead through a window at Creighton's Camp. Horses and mules are frequently stolen from some part of the work. If these depredations are to be continued, it will soon be worth a man's life to go over the work. Let us have martial law if necessary to keep off the whiskey. Every pay day the men lose several days; the work is materially retarded in consequence.

Dale Creek Bridge is not completed. We are doing well on it. Boomer is raising the truss work. The trestles will be nearly completed this week. Have not made comparative estimate for cost. Work is let to station 1500 at Medicine Bow; shall let more as soon as line is located. Grading through first range will be completed in fifteen days if weather is good. We have just had the worst storm of the season; lose two weeks in cleaning cuts of snow."

1868
On March 30th, Mr. Ames wrote me as follows:-

"We are very greatly delighted with your success in the controversy with Washburn. It shows the necessity of having some one there that thoroughly understands the whole subject."

If the railroad committee shall now report a bill giving to Congress, after the road shall be completed, power to fix our rates would it be attended with much trouble? The law allows us 10 per cent on our stock and I think the most of us will be satisfied with that, and the Committee would not be allowed to cut us down below that.

Your letter enclosing extract from Blickensderfer's and Evan's is received. The recent snow has made their surveys still more difficult and they will not now get at work before the first of April.

Dr. Durant and Dillon propose to go out on the work next week and let it out as fast as possible. I think I have never seen the Doctor more pliable and anxious to please everybody than now. It may, however, be for the purpose of getting power in construction of road. I hope, however, he will be as he now pretends only anxious to push forward the road.

I have ordered tunnelling machinery (two sets) so that we can carry along two faces at once. It is same as used in our Hoosac tunnel and is there answering a good purpose. We have also ordered some of the same drills for through cuts.

I don't think that Seymour wants to go out on the work this summer. He had quite enough of it last and with a result anything but satisfactory."

1868
On March 30th, Mr. Blickensderfer wrote me from Salt Lake as to the heavy snows and the difficulty of parties reaching their destinations and their work. He says:

"Morris had only just passed Weber Station today. Roads are breaking up all the way. We made three miles yesterday and three today; are moving slowly, but have passed most everything on the road going to Sweetwater. Yesterday the stage stuck three hours and had to dig out. Have hired a team of 8 cattle to keep along and today with 4 mules and 8 bulls to one wagon, had to rest every 50 ft. As soon as he reaches snow, he will, if there is any prospect of his doing better, get sleds, put his wagon beds on them and try it in that way."

1868
On April 20th, I received the following letter from Mr. Oliver Ames:

"I am greatly obliged to you for the very effective speech of yours on Pacific Railroad. It cannot but have a large influence on the minds of all disinterested parties.

Your letter saying that the railroad committee would report a bill to take effect after the completion of the road was shown to me by Mr. Duff. I think there can be no objection to that if we can secure a fair minded man on the committee.

The great snow storm must delay your parties for a week or more. You spoke to me once of the importance of an early commencement of the work on the Bitter Creek country, so that the grading may be completed before the country is dried up so that we cannot work there. Will you write me showing the necessity of our starting work in this region immediately that I may lay your views before our trustees?"

1868
On March 30th, I wrote Mr. ~~xxxx~~ Blickensderfer. Giving him a description of the preliminary lines run in 1867 west of Wasatch Range and Humboldt Wells, as follows:

Washington.

I herewith enclose map of country between Wasatch Hills and Humboldt River with all the lines laid ~~those~~ run by Mr. Reed and Bates in 1865-1866. Also lines run by Mr. Ives in 1866 and 1867 for C.P. R. R. Co. The south line of Ives was a reconnoissance, the north line an instrumental line and I have put the distance on each.

I also send you a detailed description of both lines as made by three engineers in the official report to Sec. of Interior. From all the reports, it would seem that the north line is far superior to the south, although by examination of Mr. Reeds' printed report of 1865, you will see he projects a line across the desert going through the Goshute Passge which he thought would be feasible while Mr. Bates in his report of 1866 seems to consider projected lines unpracticable. From the map which is very accurate so far as it goes and especially on north line as I have made it from the best and latest ~~surveys~~. From the map and description I send you, you will get a good idea of the country. The objectionable features on north line is the crossing of Promontory Point. I therefore telegraphed you to try a line over and around that point and I think you should determine

1st. The best and most feasible line from Weber Canon to north point of Great Salt Lake so as to locate it as soon as any parties get at liberty.

2nd. The best line from North point of Great Salt Lake to Reeds Pass or Humboldt Wells as it is pretty well settled that in passing the Humboldt Range of Mountains, we will have to used Reeds Pass.

3rd. As soon as we can get other parties at liberty later in the season, we will examine the southern line crossing Reeds Pass through the Cedar Mountains, the Goshute Pass, &c. But every thing indicates that for grades, distances, water, work and to avoid the desert on Mud Flats, the north line is best. It has timber, water, &c. but is said to be objectionable on account of snow. How this is, I am unable to say but you can ascertain. Ives seems to think it is no worse than South Line. He also asserts that in spring of year a railroad cannot be held up or kept up over the Mud Flats or Desert, and that it must be put on piles.

In crossing the arm of the Lake, I have asserted we could pile a mile and fill balance of distance in with earth from Promontory Point and Mud Island, or if necessary, we could Pile clear across and hereafter fill it; this part of lake will need thorough sounding.

I do not want this work to interfere with, or in any way delay the location East of Salt Lake and suppose it will not from your letters, and telegrams. I shall push more parties over to you as they get free East, but I want to push this work if it can be done with out detriment to the parties east of Salt Lake as I have no doubt our folks will open work all along to Reeds Pass by fall. Let me hear from you on this."

I went west the first of April to go over the line, to look at the work and to make whatever arrangements I could to push it during the summer. I found the Indians very aggressive and our escorts and military not yet fully furnished us, but I arranged for this with General Gibbon at Ft. Sanders, so as to give more confidence to the men whom we had to work ~~conr~~ the Laramie Plains.

On April 24th, ¹⁸⁶⁸ I received the following letter from Mr.

Oliver Ames:

North Easton.

"Your letter from North Platte is received this morning. I have feared this trouble with the Indians and see no way to avoid it unless the Government will feed them or give them such severe punishment that they will not feel that they can rob with impunity. I see nothing but extermination to the Indians as the result of their thieving disposition, and we shall probably have to come to this before we can run the road safely.

Your letter on the water and depot question I presented to our committee and urged its importance. I have sent a copy of it to Durant and Dillon since they went out, and a letter to them urging their acting on your suggestions.

Your remarks about the condition of road are very satisfactory. I think we should have the tunnel work gotten at as early as possible and whatever hard places there may be should be put under contract as soon as possible.

If you can do anything to make Genls. Grant or Sherman feel that it is of great importance to Government to have our line completed, and that protection by larger bodies of troops is absolutely necessary you will do a grand work."

On April 23rd, ¹⁸⁶⁸ the Indians attacked Boyle's construction party working on Dale Creek, wounding four men and killing two. They carried off twelve head of stock. There were about 200 Indians in the party. The track at that time was three miles this side of Dale Creek Bridge.

I met Mr. Dillon, Seymour and Durant at Cheyenne and had a very plain talk with both of them. Mr. Durant assured me that he had no desire to interfere with the work or delay it, but he only wanted to help. I told him we were well organized; that the lines had been well thought out; that all the engineers were very able men and that nobody could go over their work superficially and change it, and Mr. Dillon agreed with me. Mr. Dillon returned East right after my interview and I moved on West, believing that Mr. Durant would live up to what he promised.

After leaving, I received the following letter from Mr.

James A. Evans:

"Mr. Durant arrived here this afternoon and as you predicted was full of notions but did not get the start of me in any way. I convinced him that so far as the line to Green River was concerned, he could bring on his eight thousand men as soon as he pleased. I am quite satisfied that the only course insuring comfort in dealing with him is to put on a reasonable amount of assurance. I gave him to understand that we could locate the line faster than he could march men and transportation over the road. After that everything was right. Seymour kept in the background and didn't trouble any. I don't know what use he is here unless it is to drive teams for the rest of them."

1868

On May 4th, I received the following letter from Mr. Oliver Ames, whom I had written giving full conditions of everything on the line, as far as I had examined. The location of the road was progressing far beyond any of our expectations. Contractors were slow in getting on it but the workmen then on it were making good head-way. The following is Mr. Ames' letter:

North Easton.

"Your favors of 28th April are received. I am exceedingly gratified with the success you have in getting so good a line, and the rapidity with which you have laid it is astonishing. I suppose you last year looked over all of that line and now in fixing it have all the explorations of last season to aid you.

I have the very highest opinion of Blackensferfer's judgment and ability as an engineer, and think when he has made a careful survey of the route his decision may be relied upon as about as good a line as we can make by re-examination.

I have no doubt there will be cases on a line run with such great expedition as this has where in grading it, it may be slightly changed at great saving of cost and not injure the line essentially while it will greatly hasten construction. In laying base, the lines we frequently run into hard places that are not shown at surface and which by a very slight change of line can be avoided without essential injury to operation of road. I will do everything possible to preserve the line as laid out, but in construction your own good judgment will at once admit that changes may be made that will not injure the line which will hasten construction and reduce cost.

Snyder's indebtedness has been paid as fast as he has asked for it, and I am quite surprised to learn that he is \$700,000 now in debt. In March he reported his whole indebtedness \$600,000 and the sharp pinch in money market came on and we held up for a time. I think he wants to make the road earnings pay the contractor's freight expenses and run behind on this."

1868

On May 4th I received the following letter from Mr. R. W. Kelly, who had been with me in railroading before 1861. It is interesting as giving the view of matters in the south:

Lime Kiln, Ala.

"It is so long since we have met that I was fearful you had forgotten me, had I not met Gen. Spencer last week on the cars and was gratified to learn from him that amidst all the changes which have taken place in the last eight or nine years you still inquire for some of your old friends, and thought you might be pleased to hear from me.

Since I came South in February 1861, I have been engaged on the same road. The first two years as general purchasing agent or commissary, and also general manager or "Walking Boss" on the work under Mr. Boyle, brother of John Boyle, who stands as high here as a R.R. Contractors as John R. does in Iowa. About that time or in the fall of 1863, I was promoted to Asst. Supt. and placed in charge of the whole work, but my principal duty was in running the trains over 20 miles of the road and 60 over a connecting road into Selma with coal and iron; as a very large proportion of all the coal used in the south the last two years of the war came off our road, and it was often a matter of astonishment that the U.S. Government did not make an effort long before Gen. Wilson made his raid to destroy that portion of the state of Alabama, as I believe that alone would have broken down the confederacy.

My position on the road exempted me from conscription, so I had no trouble in keeping out of the army. Since the surrender I have had the entire management and control of everything connected

as all the members of the company were so broken up by the war that they had neither the means nor spirit to assist me in anything, and I repaired all the damage done me by the war in building the bridges and shops and everything else without a dollar to begin on and kept the road up ever since, but owing to the scarcity of money it has barely paid expenses.

Last December we elected a new President and Board of Directors and they are making a great effort to put the road in a shape to go ahead and I hope will succeed both for the sake of the country generally, as it will open the richest mineral region in the world both in coal, iron, marble and limestone, and there are some very extensive iron works in course of construction, but Northern capital is a little "Scary" of investing in the South yet, and also on my own account, as I am tired of working for a Company without money, though I have done pretty well for this country as it was very difficult for me to save anything out of the wreck, but I have got everything the Company owed me but had to take it in property that is not now available.

As you are no doubt tired of reading this long letter, I will close by saying I should be pleased to hear from you, and would also like to hear a little of your operations on the Union Pacific R. R."

Mr. Kelly was a Union man but seems to have remained in charge of the railroad shops all during the war.

When Mr. Durant was at Cheyenne and Sanders, when he found I had made a final location of our shops at the East base of the mountains, ^{he} contended that they needed a shop at the West base at Laramie, which there was actually no need of. His suggestion was simply to undo the work which had been done at Cheyenne where we were building up a large town. Any road going to Denver would go from Cheyenne which also made it a noted point and then any road going north in the future would have to leave Cheyenne or near there. Many people had bought lots on the promise of shops and the Denver Branch.

On May 4th ¹⁸⁶⁸ my agent at Cheyenne wrote me the following letter in relation to this matter:

Cheyenne.

"Since you have come and gone there appears to be a general spirit of dissatisfaction gaining ground. Rumors are afloat that the Company will not build round houses, &c. here but at Laramie City, and there is a general stampede for the new town much to the dissatisfaction of the extensive property owners in Cheyenne. The people claim the R. R. Company held out the inducement for them to settle here by saying it would be one of the most important towns on the line of the road; that extensive machine shops, round houses, &c. would be located there. It would be the point of intersection of Denver branch, &c. and on these representations had faith in the enterprise, expended their money liberally built up a big town, &c. and now that spring has come instead of carrying out the promises, they lay out new towns and offer property for sale. The company have not sold one-tenth of their property here, and I firmly believe that we cannot be able to collect one dollar due on second payment if the Company does not take measure to push forward the improvements contemplated.

It is currently reported all over the city that Dr. Durant stated that the Denver branch should not intersect the road at this place if it cost him five hundred thousand dollars individually. That Mr. Reed stated that all the expenditures would be made at Laramie City and it would be the place; that Cheyenne would be depopulated within 60 days &c. Of course you know how people in a town like this run with any thing of that kind, and what I want is for you to write me a letter giving me the necessary information to quiet such reports, and I will have them published in all the papers here.

People are talking loud, saying Gen. Dodge's promises so and so. I think it would be well to stop it as soon as you can conveniently. Let me hear from you soon as you take any steps about the new town on the Platte or farther West. I want to sell the property for you. I am today settling my Wells, Fargo business and intend going up in to the Sweetwater country, and will be back about time you get out. Write me at Cheyenne."

R.E. Tapley

The principal shops on the line west of Omaha today are the Cheyenne shops. The Laramie shops are kept up simply for road repairs, but the action of Mr. Durant was a great detriment to Cheyenne and a great loss to the Company in stopping the sale of lots, for a time and helped build up Laramie. Cheyenne is now the capital of the State, and Laramie City is quite a growing town on the West side of the mountains, but if the company had devoted their time and energy from the beginning to Cheyenne, in my opinion, it would have been a much larger place than it is. It was a long time before they put in shops there to the full capacity which was required.

On April 3rd ¹⁸⁶⁸ our track reached Ft. Sanders and they opened for business on May 3rd.

As soon as I reached Washington I received a long dispatch from Mr. Durant about surveys west of Salt Lake, his purpose to put forces to work there, &c. I knew the dispatches were a bluff; that he could not send forces so far ahead of his track and answered him as follows:

Washington
"Is it policy to locate from Reed's Pass east as well as from Salt Lake west, or all from Salt Lake. Instruments and maps are in Salt Lake and it only needs my order to put location in motion."

Washington
"I have one party west of Salt Lake but have received no order to make location. Can put parties on and give you line in any time directed."

I sent the following dispatch to Mr. Blickensderfer to put construction parties on line west of Salt Lake;

Washington, May 11".
"Send for Hodges and put his party from Weber Canon grade West. If Max well gets good line around South point of Promontory Point, it will not be necessary to run north over it."

On May 4th, Mr. Snyder wired me that the Indian affairs grew no better. Men driven in by them daily at different points on the line; that the Battalion of Pawnees, one hundred strong, will be on the line tomorrow-Kearney to North Platte which would help them."

On May 6th, I received a letter from Mr. F. S. Hodges giving his movements. He got into the field on March 11th. He first tried a line up Box Elder Creek over the divide to the waters draining the Cache Valley, abandoned as impracticable. Line was then established near Bear River Station, and run via low pass into Cache Valley, thus avoiding the canyon which the line down Bear River of last year traversed. A fine line and cheap can be obtained, with a summit cut of 60 ft. grades easterly 50 ft per mile; westerly 90 ft. per mile. The line was continued around near the southern end of Cache valley to Blacksmith's Fork striking said stream some 15 miles above its confluence with Bear River. He then run down the Bear River to Soda Springs where he was to run southward following the Bear River to Ogden. The weather had been generally fine. The Mormons expected an immigration of 19,000 souls that year to arrive in August. Grasshoppers had already made appearance in vast numbers. Flour has gone up from \$5.50 to \$7.50 per 100 lbs. Ives of the C.P. line started out to finally locate the Central Pacific line to Salt Lake City. He nearly lost 4 men by drowning. Our pack mules knocked off ^{the track} down some 800 feet into Blacksmith's Fork; ~~were~~ rescued with loss of bedding of 5 men. Saddle horses knocked off same spot into river and got ~~at~~ 6 mule team, by caving away of dugway in Loyal Canyon, was upset rolling over twice into the river. We rescued teamster, wagon, load, harness and 2 mules, but the other 4 mules swept off and drowned. Bought 4 more mules, had wagon repaired and had party off with delay of but 24 hours."

On May 6th, ¹⁸⁶⁸ Mr. Durant issued the following general order from Ft. Sanders:

"General Order No. 1. For the purpose of facilitating and perfecting the early location of the line between this point and the Great Salt Lake, and enabling the Company to place the large construction force and supplies which are now moving westward,

upon the most difficult points without unnecessary delay, it is hereby ordered:

1st. The consulting engineer, Col. S. Seymour and the chief constructing engineer, Samuel B. Reed, will pass through the line at once and examine the details of the location at all difficult and expensive points.

6th. In order to prevent unnecessary delay in the work during the absence of the Chief Engineer from the line of the road, the consulting engineer is hereby invested with full power to perform all the duties pertaining to the office of acting Chief engineer and his orders will be obeyed accordingly by every one connected with the engineer department. Any orders heretofore given by the chief engineer conflicting with orders that may be given by the consulting engineer during his absence, are hereby rescinded."

This order reached me through Mr. Evans, after I returned to Washington. It was not sent me officially. I knew it meant mischief, but as I did not intend to be absent from the line during the summer, I saw that Seymour could not accomplish much with it, and I knew that Mr. Reed would pay no attention whatever to him. I immediately sent the order to Mr. Ames, telling him that if Mr. Seymour undertook to do this, or to change any of my lines which had been approved

by the Government, there would be trouble, as I would not stand for it; that I would resign first. I told him I knew what the order meant and that I was prepared to meet it. This order was a direct contradiction of the assurance Mr. Durant had given me and I had no doubt was instigated by Seymour, thinking I would submit to it, but as the future will show, it was really the final undoing of Durant.

On May 11th, ¹⁸⁶⁸ Mr. Evans, who had received a copy of this order, wrote me as follows:

Ft. Sanders.

"I enclose circular which was handed me on the evening of the 9th inst. As it seemed to involve a probability of my receiving orders from a multiplicity of sources none of which commanded my respect I resigned. At the urgent request of Mr. Durant and with the understanding that so far as I am concerned no orders from S. Seymour can reach me, I have consented to remain long enough to finish up office work of line already located, and it may be incidentally do other things which are necessary. I don't, of course, object to making myself useful, but nothing can ever induce me to do business with the man Seymour, of any kind. My course with reference to the order brought on quite a discussion with regard to its merits, and notwithstanding the orderly S.S. had an envelope quite full when he handed me mine, I do firmly believe it is the only signed copy in existence at present.

In regard to yours of the 5th received yesterday making inquiry as to line- we located on the projected line from the Bitter Creek summit thereby saving largely both in elevation and distance.

I have been asked to take charge of the construction west of here, but have declined and for the following reasons: 1st. Everything connected with it is chaos and they are building so fast and the work is so light that there is no time to organize it properly, during the time it would necessarily take to bring order out of the confusion most of the work would be done. Don't you think I was right? If the work west of Green River was given me, at present being some distance in advance, perhaps I might do it.

You can't hardly imagine how much I have desired to have you on the ground during the past two weeks. Reed is the weakest backed man I think I ever saw. Durant has gone East to be absent nearly a month."

On receipt of this letter from Mr. Evans, I immediately wrote him to accept the charge of the construction from Sanders West to Green River, as an Assistant to Mr. Reed. I felt that being right on the ground, he could be of great aid and I knew it was impossible for Mr. Reed to be on the work East of Green River, and I expected him to act fully under Mr. Reed's orders.

On May 14th I received the following letter from Mr. Oliver Ames, in relation to the Durant Circular:-

New York.

"My brother enclosed me today, a circular issued by Durant making it the duty of certain engineers to report to Seymour and Reed, or rather place their maps and profiles at their disposal that they may aid them in location of line. The whole circular is one of those peculiar exhibitions of character which Durant everywhere exhibits and which shows the impolicy of giving him power which he is sure to abuse always. I think at our next meeting, we should definitely fix up the powers we intended to give him or repeal altogether the resolution making him agent for this work. I understand from my brother's letter that Evans has resigned, and that Blickensderfer wants to. I hope you will be able to induce them both to continue. Durant has no power over the location. The power granted him was simply intended to authorize him in the construction of the road, to change grades and locations where the work developed unexpected obstacles, and to expedite construction grades and location **not be changed**.

I hope you will not feel that any such power as Durant claims was expected to be exercised by him, and will not be sustained by the Board of Directors. When you return from Chicago, come this way, we would like to talk these road matters over and fix the power that Durant shall have, if any such thing can be done."

The Central Pacific Railroad Company were trying to take advantage of a clause in the charter which authorized each party to file a line 100 miles in advance of their work and they were endeavoring to file a line a good deal more than 100 miles ahead of the work, reaching nearly to Echo Canon, nearly 100 miles east of Ogden. I had had intimations of this from my friends in the Interior Department and had consulted Mr. Oakes Ames upon it and on May 15th I received the following letter from Mr. Oliver Ames:

New York.

"I have a letter from my brother yesterday saying that the Central Pacific R.R. Company were pressing their map and location upon the Secretary of Interior, to allow them to lap over to the east side of Salt Lake. This should not be granted, and I think that my brother feels that you will be able to check its adoption. I think it is our duty to put out parties of surveyors west of Salt Lake so far as we shall be able to complete it.

I would recommend as fast as your parties complete their surveys east of Salt Lake to put them west, and have the line surveyed gully up to the point where the Oregon Road will join ours. The occupation of this territory is important to us and will give us control of this traffic to our road. The surveys east of Salt Lake I understand are in an advanced state, and you will have a force soon that may be released from the location to be pushed farther west. If you have not force enough to do this work and secure this work in season, I would advise its employment at an early day."

I knew that the Central Pacific Railroad had never made any detailed survey East of Salt Lake. They had made reconnoissances in taking barometrical elevations and they claimed to have set their stake 500 feet apart.

On May 17th ¹⁸⁶⁸ I received a letter from Mr. Blicksneiderfer in which he said that he had returned from Green River in company with Mr. Reed and Col. Seymour, where he was telegraphed to meet them.

Reed and Seymour were evidently making an examination of the line as being located from Green River to Salt Lake, and Mr. Blickensderfer went over the line with them.

I had returned to Washington to look after matters in the Departments; the Central Pacific people seemed determined to fasten their line at the head of Echo Canon, no matter where we built.

On May 18th¹⁸⁶⁸ I received the following letter from Oliver Ames in answer to mine, and after receiving Durant's order to Mr. Evans:

North Easton.

"Your favor of May 14th is received. I had previously received the letter of my brother enclosing circular from Durant. I wrote you from New York on the subject. This General Order No. 1 dated Ft. Sanders is without signature though it purports to come from "Vice President and General Agent of U.P.R.R.

At the last meeting of Board of Directors, Durant was anxious that a resolution should be passed giving him, with construction engineer authority to alter the line where in the construction it became evident that the change would expedite the progress of the work, and this only under the Ames contract. This order of Durant as far as it confines itself to construction and a change of location to facilitate construction may be within the scope of that Resolution. But when he interferes with your authority as Chief Engineer and the control of your parties he is entirely beyond his limits, and should not be recognized. I will write him at once. I enclose the Resolution."

On May 20th,¹⁸⁶⁸ I went to Chicago to attend the convention at large which nominated President Grant as delegate from the State of Iowa and at request of Gen. Grant to look after his interests, and there received a letter from Mr. Evans dated May 21st, as follows:
Ft. Sanders

"Your note from Chicago reached here today. Thinking that as you are on the move and that some of my last letters may not have reached you (although I am sure that I have written you quite fully about everything) I will report some things. With reference to my resignation, it was brought about by my receiving a circular which placed me in a position to subject to Seymour, which I couldn't do for a minute therefore I could see no other opening but to resign at once. There was no time for a consultation with you or with any one, for had I waited to communicate I was liable to receive an order at any time, which would have only been disobeyed and then a dismissal, and I preferred keeping what little advantage I may have had to trusting to him.

At the request of T.C. Durant I afterwards agreed to stay until the notes of the location were put in shape, with the understanding, however, that while doing it the "circular" so far as I am concerned was inoperative. You have seen the circular by this time, and as I wrote you, it is supposed to be the only one with any signature. Mine was handed to me by Seymour, who seemed to have an envelope quite full of them, but my action was rather prompt. I had received some notice of what was coming, in fact, had seen the document in blank a few hours before, so that a very little time elapsed between the delivery of one and the sending of the other. If I am not mistaken it was a plan of Seymour from the beginning, and if not further mistaken he was much more chagrined at its failure.

Since then I have agreed to take Reed's place during his absence which I hope will be short, as it is no sinecure. Track, grading and bridge all in a pile together. I think it will be difficult if not impossible to prevent delays, still I think they can easily build to Green River and perhaps to Bridger this season. Everything, of course, is being done in an extravagant manner. Tomorrow the track will be at the 6th Hundred mile post.

Your request of the other day, even if changes had not taken place, I could not have complied with; being a cripple for how much longer I cannot say. When you were here I expected to be about before this, but at present can see no end to it. There is a little improvement, but it takes days and weeks to make it perceptible."

I immediately communicated to New York in relation to the Durant orders and movements and stated to them that the Government would not stand for any of his actions and that the Company was liable to get into trouble; that I would not pay any attention to his or Seymour's orders and had so instructed all of my employees. The New York people were greatly disturbed over Durant's actions and orders and the reports they were getting from Mr. Reed. As a precaution, on May 24th, I wrote the following letter to Mr. Blickensderfer from Washington:

"I have learned through private sources that Col. Seymour has gone to Utah with authority to order parties, change lines, grades, &c. I have had no notice of it and it must be a mistake. However, Mr. Ames the President of the road, desired me to write you and say that no one has authority or power to give you orders, or the parties under you, but myself, and you will carry out my instructions.

You will, of course, do all in your power to ~~aid~~ Mr. Reed and the contractors in the construction of road and as fast as our parties get through, they can go on to construction, when they do, turn them over entirely. The contractors have power to change lines and grades temporarily to expedite the work, but under the contract must finally build the line we turn over to them. You will therefore turn over to them the permanent location as fast as possible and endeavor to turn it over so fast that they shall make no complaint for want of line. If we have parties or time to spare, we could make any temporary change they might desire, but that would be for them, not for the company.

I telegraphed you to put Hodges on location West of Weber Canon, but get no answer. I want the line located from Weber Canon to Reed's Pass as soon as possible. I, as yet, get no profiles or maps of location made west of Green River; suppose it takes all your time to furnish copy to contractors. Am looking anxiously for the profile and maps of your line. Let me hear from you."

1868
On May 29th, I received the following telegram from Mr. Oliver Ames from New York:

"Injunction dissolved. Durant gone, supposed to Omaha. Advertise Dillon's election and that Committee, naming them, alone have power to contract for Union Pacific R. R. Notify personally banks and all officers of both companies that Durant has no authority."

When the company took all authority from Durant over me and over contractors, he served an injunction against the Company virtually preventing the carrying out of their orders.

On the same date I received a note from James A. Evans acknowledging receipt of my instructions, and he says:

Ft. Sanders.

"There will be a great pressure brought to bear to keep me on construction. What the result will be, I don't know, neither do I care. Rest would suit me better than anything else. The last year has been particularly hard. I feel it most sensibly the work could have been easily gotten along with, but there are other things constantly with me, and I am quite sure that it will lead to a breakdown very soon. As long as I can, will try and do whatever there is to be done. This I suppose is the duty of all of us, if not to ourselves, to those who come after us."

On June 1st, ¹⁸⁶⁸ I received a letter from Mr. Blickensderfer from the head of Echo canon saying that the weather both here and on the rim of the basin had been very bad; that they had had a snow storm which lasted three days and he considered the line at the head of Echo down the most difficult of any that they had yet tackled, more difficult even than the Black Hills. He wrote "There seems to be but three practicable lines over this summit as follows:

First part of this letter missing; other part on next page.

Echo Canon, Utah

one is by the main valley, followed by Reed. The second is that surveyed by Hodges; and the third is obtained by a deflection to the west and a descent by the valley followed by the stage road. The first has no objection to it except that it requires, to secure a good grade of 90 ft. per mile, a tunnel of 2000 to 2400 ft. in length and considerable heavy embankment. In one case 78 ft. high for about 200 ft. The second occupies very bad ground from the summit down to the tunnel, exceedingly broken and rough and liable to heavy land slides. Part of Hodge's line has broken from hill side and slid down some distance since he was on ground. The tunnel on the third line will not exceed 600 to 800 ft. in length and the line below the tunnel is good except on heavy embankment. This line has its greatest objection in the bad alignment and bad ground necessary above tunnel, and that it is in the very worst position in regard to snow all the way, much more liable to obstructions from that source than either of the others. The third line is not yet fully developed. It will require no tunnel, or at most one of 300 or 400 ft. in length, occupies good ground and is less likely to be obstructed by snow than either of the others, being in that respect on the most favorable ground which can be obtained, even better, I think, than that in the main valley. I fear it will require heavy embankments, but I incline to think the total work required to secure a grade of 90 ft. will not be more than on either of the others, and that it will be capable both of more rapid construction, and of being more easily and certainly operated when done. My parties are now busily engaged in developing the full capabilities of each route, so far as least as to enable me to make a good comparison between them all.

I find Col. Seymour now a strong advocate of the use of higher grades, and the cheapening of the cost of construction by that means. This strikes me as singular, being the very reverse of his views strenuously urged last season in reference to the Black Hills location. Mr. Reed seems to favor low grades, none exceeding 90 ft. per mile, but he does not press his views so strongly as the Colonel does. At the request of Col. Seymour I am to ascertain the comparative merits of the three lines above mentioned over this summit, compare them with the cost of each on a grade of 90 ft. per mile, and the diminutions in cost which could be affected on each by the adoption of a grade of 100 ft. per mile, and submit my recommendations. This I will do, but at least a week must elapse before these facts can be ascertained and presented, and should bad weather intervene more time will be required. When this is done, however, this whole location here will be determined and the balance will be easy.

Since my return from the rim of the basin a week ago today, I have been advised by Seymour and Reed, that during my absence they sent a messenger after Maxwell, recalling him, and set him to work locating from mouth of Echo down Weber. They also took Bates away from the narrows and sent him down to the Devil's Gate to lay out work for Brigham Young; and only on Friday last, after getting a letter from Bates in which he reported the facts, they told me farther that they had elevated the grade of my location through Devil's Gate and Weber

Canyon-ten feet, and directed Bates to relocate to same grade. Maxwell reported to me he had received the above message from Seymour and was on his way back. Owing to bridges being washed away on Weber, he had not reached his destination at Weber Station, (mouth Echo) on Saturday evening. I presume from his reports to me he will get there today. He has thus lost a week in changing position, and Bates by same reason and changes in location at least an equal time."

Upon receipt of this letter from Mr. Blickensderfer, I immediately wired him that Seymour had no control of his men; no right to change them. These orders of mine reached Durant and he immediately wired to Col. Seymour countermanded Seymour's orders, recalling Maxwell and others and said he should not interfere with my orders regarding surveys and locations. If he wanted more men on construction, he would have to send to Evans or Omaha.

¹⁸⁶⁸
On June 2nd, I sent an order controlling the grades at Echo, as follows:

"From head of Wasatch west what about your line? I want grade not to exceed ninety feet. You are to decide this matter. Have you received my orders? I hold you responsible. Answer to Washington."

All this conflict of orders was demoralizing to parties, made delays in the work and was being felt along the entire line and it was with the greatest difficulty that I kept up the discipline and everything moving.

¹⁸⁶⁸
On June 2nd, I wrote Mr. Oliver Ames as follows:

"Messrs. Dillon and Durant desired me to inform the company as to timber fit for ties, ^{Washington, D.C.} and fuel.

The first met here will be along the Raft River Mountains near Red Dome Pass 80 miles west of Weber Canon. It is possible a little may be found on Promontory Point, but I judge not; next is the Goose Creek Mountain timber which will be 10 to 30 miles from the line on the north slope, this is 160 miles west of Weber canon; and also in the Range say 130 miles west of Weber canon, and then at the summit 200 miles west of here, the mountains are well timbered, ten miles south and north and is best body of timber on route from Weber until Truckee is reached. The timber is not pine, cedar and mountain pine and makes good ties and excellent fuel. Saw timber is scarce.

¹⁸⁶⁸
On June 3rd, I sent a general order to Mr. J. E. House to be sent to all departments on the work as follows:

"The orders relating to Seymour were countermanded long ago. He has no authority to interfere with the line or orders, and has nothing to do with my parties."

¹⁸⁶⁸
On June 1st I received the following letter from Mr. Webster Snyder:

Omaha.

"Yours 29th came tonight. I don't know of but one copy of the order on Seymour that was signed, the one given Evans, and that was disposed of quickly as Evans at once tendered his resignation. All at Laramie urged the Doctor not to issue the order but Seymour was at his elbow all the while and got him to do it. I don't think S. took any of the orders with him. If the contracting firm west of Green River is not Young, Reed & Company, then I don't know the men or Brigham knows them too well.

Evans on construction is doing well. He is honest, capable, and thorough; has a head, and will have men about him that understand their business. If they will give him power he can put the track fifty miles west of Green River this fall. I make everything on the road subordinate to construction and am pushing material out faster than it can be used.

Reduced tariff will give better net earnings than old rates. Indians quiet. Augur thinks we will have no more trouble. Am running night trains on entire road.

Mr. Ames writes that he with Duff, Busnell and McComb will be here next week. Think we can show them something of a road."

1868

On June 4th, I wrote Mr. Blickensderfer on lines over Wasatch and on my visit to New York, as follows:

"I have been to New York twice in last week. Col. Seymour has sent several telegrams objecting to your lines. I judge he wants a 100 ft. grade. The Company decided that they rather pay 300 to 500,000 dollars for a ninety ft. maximum grade.

Col. S. says that the adoption of your line is suicidal policy; its great cost, deep cuts, high banks, walls, &c. with liability from snow and snow-slides, make an ~~allocation~~ ^{location} in the present and prospective, that the Co. will not sustain.

I telegraphed you about grades and leaving the matter entirely with you not knowing but what you considered yourself confined to 90 ft. We are all desirous of getting as low as that as it is the ruling grade east, but we do not intend to insist on it against your judgment. In my original instructions, I left the matter fully with you. If the work is very heavy, we will have to put in a temporary track and go around it, say with 140 or 200 ft. grade and thus not delay work on location or delay progress of track. I have thought that track could be laid cheaply, right on Reeds old line; a short 200 ft. grade would bring it into the valley that Reed ran down and avoid the very heavy work which it is feared we cannot take out before track arrives there.

There is a great pressure for located line to put Brigham Young's men to work; and also for location to stretch out up Blacks Fork and over rim. They seem to think that by Sept. 1st track will be at Green River if so, every foot of line to the valley ought to be covered with men now.

I expect to get letter from you daily. Mr. Williams is here.

I regret that Col. S. was sent out for I was certain he would cause trouble. There never has been a man on the road that he agreed with; what Mr. Reed thinks of line I have not heard."

1868

On June 6th, Mr. House wrote me that the track would reach Laramie City the next morning; that they had had considerable Indian difficulties on the road extending from Plum Creek West. Four section men killed near Plum Creek Station; one man killed at Sidney, two conductors wounded, one scalped; both cases considered very dangerous. Four men killed on Byle's work and 6 teams captured. 4 or 6 men killed on Hall's work and that Mr. G. M. Davis, Jr.

was killed at one of the saw mills day before yesterday."

On June 6th, ¹⁸⁶⁸ I wrote Mr. House that I should leave Omaha for the West about the 20th and get my camping outfit together, sufficient to accomodate about fourteen persons.

On June 8th ¹⁸⁶⁸ I wrote the following letter to Mr. Oliver Ames; Washington.

"As Mr. Durant, Vice President, complained to me when in New York that I had not sent all my instructions and preliminary profiles, maps, &c. to the N.Y. office, it is proper for me to state in explanation that it has been impossible for me to do it. It was late this spring before I ever got the lines, ^{fixed} most of the parties did not get out on the field before December and it took a long time to make up their reports, and I started them back into the field again before half of them were finished. I managed to get in a connected line of the one adopted for location but even parts of this I had to copy here. No time could be taken or delay had and up to now I have not received Mr. Bates' report as you all know the pressure on me was very great, especially for location to Green River and I was not notified that the grading would be pushed so fast west of Green River until March, giving me no time even to copy profiles of what part of the country, or even maps. I had to send the originals to Mr. Blickensderfer. Where so many thousand miles of line are run in one season, it is an immense job to get up the maps and profiles and while my office at Omaha has been engaged at it, still they are often called off for more pressing work. As yet Mr. Evans, nor Mr. Blickensderfer, Jr. have been able to send me maps or profiles of their locations, pleading as an excuse my orders to them ^{to turn} over first to the contractors on the ground, their profiles and maps of location in order that no delay may be had; also the fact that they have ^{been} pushed beyond all precedent. Mr. Evans writes me today, in which he says: "The last twelve months have been particularly hard on me. I feel it most sensibly, and I am quite sure it will lead to a break down very soon. As long as I can, I will try and do whatever there is to be done. This I suppose is the duty of us all."

Now, on behalf of my parties and my chiefs, I challenge the world to show an amount of work done by any one before that has been done by them. Summer and winter they have faced all the dangers, steadfastly, two have been killed by Indians, ^{others} drowned in crossing streams; frozen to death and suffered everything that man is heir to in that wild country; and while I have had to neglect some of the details, I have endeavored to so shape their course and work that they would meet most effectually the wants of the company.

I have also labored under a very great disadvantage in not being apprised in time of what the Co. really desired done. I have had to act almost exclusively on my own knowledge of matters without orders and thereby endeavor to anticipate the demands of the company.

I shall now soon be able to send in copies of all profiles and maps with the reports for the surveys of 1867. Last year I sent in my report with a box of profiles and maps and as they were never opened for six months and you then said it was not necessary for me to submit all the matters to the New York office, but that they could be kept at Omaha. This year as there was no doubt as to the line we should adopt I did not suppose you cared for the maps and profiles of lines abandoned. The lines Mr. Blickensderfer is locating, the preliminary maps and profiles are all on file in the New York office.

At the beginning of each season, I sent a letter of instructions to each chief in which the years work was indicated, but as every day or week develops the movements of the company and the necessities of the field work, I, of course, change my orders to meet it, and being in weekly consultation by mail and telegraph with my parties, it is impossible for me to submit them; whenever I have any doubt on any point, I immediately consult the company. At other times I supposed there was no necessity and as you are writing me weekly, I supposed if there was any complaint on this head, I would have heard it. Mr. Durant wrote me for copies of all my instructions, maps, profiles, reports of parties, &c. and as any one must know, it is a very large job to get them up. I sent him copy of the general instructions and wrote him the balance would be forwarded as soon as possible. Mr. House is at work on them and telegraphs me that he thinks they will be all finished in two weeks, when I will forward them.

I expect to leave for the west about the 15th. I make this explanation as Mr. Durant seemed to think I had some objection to furnishing the data he called for but the fact is we have been to work on it every day since I got his letter, which I immediately answered. Allow me further to say that as a soldier, I had to obey orders fully, faithfully and in the spirit given, and to the best of my ability, and I believe I had not varied from that course since I have been in the employ of the company and if Mr. Durant reflects one moment, he will be convinced I have done all in the power of man."

Mr. Oliver Ames wrote me from New York on June 11th as follows:

"Your favor enclosing report of Blickensderfer is received, and I am very much obliged to you for it. It shows the importance of a more thorough investigation of the original line, and if he shall succeed in finding a line throwing out the tunnels, it will be a vast service to the company and country.

I am quite satisfied we shall be pleased with the course you have taken, in having the parties report to you. I have never seen the Dr. so courteous and confiding as he has been since I have been here these two days and I should think from B. letter that Reed and Seymour had not actually interfered with Blickensderfer's line but simply asked for aid from his parties in preparing line for contractors.

I will meet you in Omaha next week. Rollins, Treas. of Co. and Govt. Director Williams will go out with us over the road. I shall probably leave here next Wednesday night and get to Omaha Saturday or Sunday."

I had urged the Pres. Oliver Ames, and other members of the Board and Mr. J. L. Williams, the Govt. Director, to go out with me over the road and get a thorough knowledge of the location and what was being done, telling them there was no other possible way for them to meet the continual interferences. I was anxious that they should come in contact with the men on the ground, the heads of the different parties, both the operating and construction department.

On June 12th¹⁸⁶⁸ from Washington I wrote Hon. O. H. Browning as follows: "I submit herewith map of the located line of the U.P.R.R. from the mouth of Weber Canon to the North Point of Great Salt Lake, 80 miles and respectfully request that it be accepted and placed on file in your Dept. The Interior Dept. has accepted a map from Humboldt Wells to the same point for the C.P.R.R. while we are nearer than at point with our completed road than they are. The C.P.R.R. is now completed 158 miles leaving a distance to the North Point of Great Salt Lake of 400 miles. The U.P.R.R. is now completed 640 miles leaving it 440 miles to finish to reach the North point of Great Salt Lake."

When Mr. T. C. Durant appointed Mr. James A. Evans, he had in mind the taking away of the authority of Mr. S. B. Reed for the reason that he found it impossible to turn Reed's views in his or

Seymour's ways. While Mr. Reed was a quiet man, and said very little, he was very much opposed to all their movements and all their interference with the work in the West. They not only upset my matters, but his also, and he was in the habit of writing me confidential letters. My theory was that Evans should, under Reed, take charge of the work from Ft. Laramie to Green River, so that Reed could go West to Utah and handle that work, as he was on intimate relations with Brigham Young and they were great friends. I knew the importance of upholding that friendship, especially as the Central Pacific were catering to it and trying to influence it.

I did not understand thoroughly, the movement against Reed until June 15th I received a letter from Mrs. Reed, who was a dear friend of mine, giving me her views of the intrigues which were going on for the purpose, as she thought, of forcing Mr. Reed to resign. Mr. M. T. Seymour, a relative of Col. Seymour who had been in charge of matters at Laramie, under Mr. Reed, when the order came from Durant placing Evans in charge of the work west of Ft. Laramie, construed the order as relieving Mr. Reed of any authority over him and charged it up as coming from Mr. Snyder of the operating department.

Mr. Durant's order to Mr. Evans was:

"You will procure and furnish all supplies, teams and men and have them forwarded, as the Construction engineer has so much to do that he cannot attend to the detail, and organize your forces to suit yourself."

Another order sent to Mr. Evans by Durant was:

"At present you have charge of the work and Mark Seymour is to receive instructions from you. He was to look after the tank houses and wooden buildings. Would like to have him see that these are being built according to contract for the present, if you can as agreed. T.C. Durant, Vice President.

Upon receiving notes from these friends of his, Mr. Reed immediately sent in his resignation. I immediately communicated with him and told him that he was mistaken as to the orders, that I was in communication with the President of the Company and had no

doubt the matter would be settled satisfactorily. After my interview with Mr. Ames, I sent Mrs. Reed the following letter:

"I have only time to say that I got your letter here last night also Mr. Reed's. Mr. Ames is here; he telegraphed Mr. Reed to meet him at the end of the track, next Wednesday, also informed New York that he would meet Mr. Reed and fix the matter, they all say that Mr. Reed misinterprets their motives and Mr. Evans would not do a thing to harm him. Mr. Reed is mistaken about the reason that Evans took charge to Green River. About his resignation being accepted, Evans resigned and instead of accepting it, they withdrew the order that was so obnoxious; that is their explanation to me and I am certain Mr. Ames so understands the entire matter and was surprised when I told him of Mr. Reed's resignation. I also read him copy of Mr. Reed's letter and he immediately telegraphed as I stated above.

I go west to the Humboldt and shall see Mr. Reed. Mrs. D. is south. Will be home in a day or two.

You will of course count this private as I write it to relieve your anxiety."

I arranged to meet Mr. Reed at the end of the track when we went west to go over the conditions of matters very fully, and when Mr. Reed came to compare notes, I found that Mr. Durant was representing one thing about his notes to Mr. Evans and an entirely different one to Mr. Evans, but the matter was fully settled, by giving Mr. Reed by order of the Construction Company, full authority as Superintendent and Engineer of the Construction work. While this put him in charge, it did not relieve him of the continual interference of Durant and Seymour. Mr. Evans' letter shows with what reluctance he took hold of the construction department and that he thoroughly understood his position, and a good deal of the trouble came from the mischievous interfering of men who pretended to be friends of Mr. Reed's, but wished to make trouble. As I had had to intercede for Mr. Reed several times before and I knew the importance of keeping him on the work and in charge of it, he afterward said it was through my efforts that he remained on the work until he was completed.

On June 9th ¹⁸⁶⁸ I wrote Mr. Oliver Ames on the Denver Branch, Cheyenne shops, etc., as follows:

Washington.

"Gov. Evans called today in relation to the Denver branch also Mr. Wolf, the Delegate from Wyoming. It seems that there is some doubt about the point of junction with our road. The grades and work being lighter to Pine Bluffs than to Cheyenne is light and the grades at one point heavy; 80 ft. for a mile.

Gov. Evans thinks we had better go to Cheyenne; it equalizes the trade east and west and is ten miles shorter for the branch. This would cut off any other road and no doubt we would get the benefit of the land grant to the U.P.E.D. whereas if we go to Pine Bluffs they can come in and build to Cheyenne on their land grant and get a western connection. Again if the road is extended north, it must go down the Chugwater and Cheyenne is the direct route to strike this stream.

2nd. In advertising for sale of lots in Cheyenne the Denver branch was advertised to go in there, we also promised the military authorities if we built it we would bring it in there as they desired to get their distributing depot on the north and south road. Cheyenne people will make a row with us if we were to break faith with them, and in my opinion, it just now is very important that we should not bring down on us any such feeling.

3rd. The Bill has just passed the Senate organizing the territory of Wyoming, with Cheyenne as the capitol. A bill has passed one house establishing an U.S. Arsenal at Cheyenne. As that is the Govt. depot, and it has the endorsement of all the Govt. officers Cheyenne will always be the distributing point north and south for Government being on the most direct and best thoroughfares.

4th. The Co. are to build their shops, &c. at Cheyenne and these will obviate any outlay for additional shops at the junction of the Denver branch. If it connects at Pine Bluffs, shops or round houses, will have to be built there. The line will, if it runs to Cheyenne run through the great iron beds of Lone Tree and also through the coal beds of Lone Tree. How good this coal is I cannot undertake to say, the iron is first rate. It is also on the direct route to the iron mountains near head of Chugwater.

There appears to be one and only one disadvantage to the Cheyenne terminus, it has a higher grade, the difference cost of work cannot be much. It takes the Denver trade over 40 miles more of our road than if it connected at Pine Bluffs and is that much advantage to the U.P.R.R. it virtually cuts off the U. P. E. D. R. R. if it ever builds to Denver and will bring their trade over this branch, but if we turn east from Denver and make the connection at Pine Bluffs, they have an open field for a connection with us at Cheyenne, with a good land grant along the base of the mountains to back them. These and others are the commercial reasons that should, in my opinion, control the location. It would be better to cut the 80 ft. grade down to 60 at the extra cost than to lose the advantages on a purely local line and be far better to do it than to break the plighted faith of a great company. I am confident that the line to Cheyenne will cost very little more per mile than to Pine Bluffs."

1868

On June 16th, I received the following letter from Mr. Dillon who was Chairman of the Board of Construction, and was greatly disappointed that he could not go over the line with me:

New York.

"Since I last saw you some of my private business has gotten into such shape that it is impossible for me to leave home without suffering a very severe loss; therefore, I can't go to Omaha with you. I regret it exceedingly. I will go out next month to stay for sometime. I wish then to go over all of the work to Salt Lake. I hope to meet you at that time.

When you go out to your review, I hope you will see that the grades are all right; at the same time if you can suggest any way to go round temporarily the heavy points, I hope you will do so. When you get to that heavy work where Reed and Seymour are be sure you are right, to have your location made before you leave it

so that they wont make any more trouble about it. I suppose you know that we have two tunnelling machines ready to go out on that work, I hear that you may change the line so that weshant use them, if so let us know as soon as possible.

Some parties in New York and on the line will try to make out that the work has been retarded by not having the line located, but we all know better. I wish you to keep me posted about the surveys and how things look on the line and what is going on. When I was in Omaha, I told Mr. Snyder that the best thing that we could do with the bridges on the old road was to put in stone arch culverts where the spans were not over 10 ft; from that to 100 ft. stone abutments with iron bridge. Have him shove it ahead as fast as possib;e if they are not, I hear our folks will divide so close that we will not have money enough left to do them. I hope you will have a good time this season.

Private: I think that Seymour and Reed have an interest with all these parties that have taken work at Salt Lake. When you see a y of them if you work it right, you can find out all about it. Make them all believe that we are all glad. I would give most anything to know if it is so. I would be a good point. Be sure you speak of it."

The statements in these letters of Snyder, Dillon and others that Mr. Reed had any interest in the contracts with Brigham Young were not true. He had no interest whatever. He was very careful in that way, though Seymour, Durant, Davis & Co. and others had. Mr. Reed knew of the different interests that Durant, Seymour and others had with the contractors but did not think it was part of his duty to make a fight on it. He hated a row and was to easy in such matters. I told him of the statements made and believed by many in the company that he had an interest also; and I was certain he had not, I defended him from such charges but Durant and others would not believe me. There naturally was great friction between the construction force and operating department if they lacked material or anything else, they laid it to Snyder; when ~~trains~~ came out of time, it was the fault of subordinates not giving due notice and often from inability of Snyder, on account of snow, wash outs, lack of equipment &c. to fill all the orders. This friction worked into permanent emmity and both sides told tales on the other. I was so busy that I did not payn much attention to it, as it was of minor importance at the time, but as we see it in the record - now it looks bad.

The interest Durant had with Davis Co. and with others was very detrimental to Reed as he could not force the discipline or push them as he could other contractors. I dont think Reed paid any attention to Seymour's interests. He had no respect for Seymour but was bound to treat him respectfully on account of the position he held and the authority he was afterwards given, Reed looked upon ^{him} as a spy and on the work for the purpose of finding fault with others and especially to defeat me and drive me out of th Company, but Reed saw all his efforts

were such failures that he soon dropped him.

On June 12th, ¹⁸⁶⁸ I filed our location west of Weber Canon to Promontory showing the conflict with the C.P. R. R.

On June 10th, ¹⁸⁶⁸ I sent the following dispatch to Mr. Ames on location head of Echo:

Washington.

"Following received from Blickensderfer. "Can overcome Wasatch with 90 feet without unusually heavy work. Margin named abundant. Will not only secure it but go far towards covering total cost of entire line with 90 ft. grade. Will keep out of contractor's way with location and get over all pressure in a few days." The margin he speaks of is three to five hundred thousand dollars, the amount Messrs. Durant and Dillon said the company would pay extra to obtain 90 ft. instead of 100."

On June 14th, ¹⁸⁶⁸ I wrote Mr. Blicksenderfer from Washington as follows on my struggle to maintain our location:

"I am in receipt of yours of June 1st. The letter you speak of sending from Bear River, I have not received. I also got your telegram of the 9th from Echo.

I am sorry your parties were discouraged and time lost as every moment is now precious. I hope you will be able to get location in east of Salt Lake by the 20th so as to commence in earnest west. You have no idea how they are pressing me for line and with plenty to make trouble, we must strain a point.

I do not know how many parties Mr. Reed will want but I hope you will be able to take four west of Salt Lake. Two will probably do his work; perhaps one. The first thing is to get a location to North point of lake and then from there to Reed's Pass. The distance is about 200 miles. Ives with Central Pacific party is now on the ground making locations for Central Pacific Co. but far beyond this is the importance of location East of Salt Lake.

I was in New York when effort was made to change your lines, and protested and it was not done You have no idea of the struggle I have had there.

I am glad Mr. Reed agrees with you. I hope you will do all in your power consistent with your duties on location to aid him in pushing the construction. In your letter you do not say whether Maxwell sounded the Lake or have you solved that problem? Send West after finishing your location east, your best men, most energetic and able, as we will have to crowd them west of Salt Lake to keep out of the way.

I shall leave here about June 15th and proceed west reaching Salt Lake as soon as possible. I shall have with me one or two Government Directors and probably one or two of the company and shall want

you to meet me at Green River with your profiles and maps. I will telegraph you in time to let you arrange.

I am well pleased with the line over rim of Basin and should judge you should take the river into Echo south of Reed's line on the stage road route. Snow is a great question in location. You have never written whether the line was located from mouth of Weber to Head of Narrows on only at Weber and Narrows leaving a gap between.

I cannot imagine what would induce them to raise your grade at Weber ~~can~~ ten feet unless you were below high water, or do you mean they raised it from 90 to 100 per mile? It is certainly surprising when we have got over the continent with 90 ft. that we should for a few miles adopt 100 when it can be avoided. Write me at Omaha."

On June 15th, ¹⁸⁶⁸ I sent Mr. Ames maps and profiles of line adopted from Ft. Sanders to Salt Lake as described in my letter to him:

"I transmit today to New York the map and profiles of all lines run west of Ft. Sanders to Salt Lake. The line adopted for location or practically located when the map was made is the heavy red line from Ft. Sanders to point "D" in Mary's Creek; then the preliminary west marked "Brown's line" running to the summit of the continent via Rawlings Spring; then Appleton's extension Branch to Bitter Creek; then Evans line of 1864 to mouth of Bitter Creek; then Reed's 1865 line and Bates 1867 line up Black's Fork to and up Muddy. to an over rim of Basin, then into Bear River and over Wasatch into Echo Canon, down it to Weber and down Weber to Salt Lake Valley, or in other words, the most direct line from North Fork of Platte to Salt Lake Valley. The profiles are marked to correspond with lines as numbered on the map."

On June 17th, ¹⁸⁶⁸ Mr. Blickensderfer, wrote me as follows:

Salt Lake City.

"My previous letters have advised you of the position of things up to the time your message of the 28th of May, formally notifying me that myself and parties were subject to your orders only, was received. This message after an unusual delay reached me in the evening of the 2nd of June at head of Echo, where I was at work with the parties of Morris and Lawrence, trying to discover the best route for the final location of that part of the line. Seymour and Reed were at Weber with Maxwell, directing him in the location thence down the valley. The message, I saw at a glance had been written by you on receipt of my letter enclosing copy of Durant's order, and at once advised me of the true position of things. This was enough, and my position was not only clear but suited me exactly. The substance of the message with a suitable explanation of the position was communicated to Messrs. Morris and Lawrence with the statement that I hoped Seymour would on being shown your telegram at once accept the position without forcing me to a decision as between masters; but that if he did force me to such a decision as between masters, my course was clear, and if they (Morris and Lawrence) had any hesitation in regard to their proper course in such an event I wanted them to decide the matter then and there without delay. They both professed that their only source of authority was myself and that they should look to me alone. I then directed them what to do until I should return saying I might be absent some days and gave them to understand I should allow no faltering and next morning rode down to Weber. On arriving at Weber, I found Seymour and Reed and Maxwell all gone down to the line; Maxwell's party having just fairly commenced on the location. After answering your message of 28th of May, I followed down and met Maxwell at mouth of Lost Creek returning, the others having gone on.

On the way down a messenger overtook me with your message from New York of June 1st, to which I immediately returned an answer by the same messenger. To Maxwell I showed your telegram, and spoke in the same manner I did to Morris and Lawrence, and he at once professed entire satisfaction and allegiance. I further

stated to him I should order him back to his survey west of Mud Creek and suggested, as I expected to overtake Seymour and Reed in a few miles, he had better go along, which he did.

On reaching the stage station in the narrows, I found Seymour and Reed there, and showed Seymour your messages. He promptly stated your messages made no difference to him; Durant's authority was paramount, and his course would not be altered. I then remarked I had hoped he would not put me under the unpleasant necessity of compelling me to decide which was the ranking officer in this business; that I was willing to afford him and Mr. Reed all the aid in my power to facilitate their getting contractors to work, and meet their suggestions whenever I could do so without conflicting with your instructions. But this would not do, I must take my position, which I then did without hesitation. The result was a conversation of some length in the course of which it was more than intimated I might expect an order sending me home; Seymour stating that if I ordered Maxwell back, he would order him to remain, and on his intimating a desire to know what I would do in that event, I promptly informed him I should immediately

dismiss every man who refused to obey my orders, stop the pay of every insubordinate person, place parties in new hands or if necessary organize new parties and carry out your orders. I thought this declaration staggered him, but I had made up my mind and by all that was good I intended earnest work.

Finally I gave Maxwell his orders in the hearing of both Reed and Seymour, and he went back while I rode down the valley with them to Bates' camp at mouth of Canon, where he had been at work rearranging the location of the Canon and Devil's Gate according to Seymour's ideas. Here for once Bates' extreme inertness did me a great favor. He had been directed by Seymour to raise my grade at the Devil's gate 10 ft. and relocate the entire line and stake out the work for Brigham Young's men who were there ready to commence

My idea is the grade was raised not because the cut was too deep at the Gate, but because a high elevation once fixed at that point would afford a good plea for a steep grade in the canon, in order to get low enough at lower end. Bates constitutional intolerance allowed him to dally with the matter and keep the contractors making roads, &c. until the evening I arrived, when I ripped the whole thing up again and ordered such a location as I could sanction and in accordance with your views. Had Bates been quicker I should have had trouble; as it was, I got along well, but have since learned Seymour and Reed were terribly dissatisfied with him. Bates was set right and the same night I proceeded to the City.

Hodges had received my order of recall and had arrived at mouth Weber Canon on Sunday, May 31st. He had gone to city to refit his shattered teams and get supplies. There he had received Seymour's order to go to head of Echo for the purpose of making examination of route by Yellow Creek Stage Station and Needle Rocks, as I wrote you some time since. He had telegraphed me this and said he would not be ready to move before Monday the 8th June. It was now the evening of the 3rd of June. On arriving in the city in the morning of the 4th, I received your letter of 24th and 26th May which fully explained all. On seeing Hodges and after a long talk with him, I found on urging him that he said he thought he could move on Friday the 5th and believing him willing and more energetic and self reliant than Maxwell I decided to send him at once to Promontory Point to take up Maxwell's preliminary line from there, and take the advance in the movement westward, letting Maxwell follow with the corrected location. He left on the 5th under urgent orders to make every exertion, and I think with his ambition well stirred up. His orders contemplate the extension of his line to Humboldt Wells and he will go there in the shortest possible time, unless otherwise instructed or recalled. I have had no advice from him since he left, but expect to hear every day. He probably reached Promontory Point on the 9th and is now no doubt well on his way to north end of Lake. His orders are to send me map and profiles of each week's work without fail, even should it in order to do so, be necessary to send special messengers to nearest points of communication.

Maxwell was stopped at mouth of Weber Canon and directed to commence permanent location from there West. When I last saw him on the 11th he was well on his way and by this time should be near Mud Island with his line.

From the city I returned to Weber Canon on the evening of the 4th and determined to remain there until that line was finally and fully located. But although I knew Capt. Bates was inefficient before the hundredth part was unknown to me. When I got into the field with his party he proved to be so entirely without discipline force or efficiency that I soon lost all patience, took matters in hand personally; drilled, discharged and woke up the men for several days in a way which I apprehend was new to them. I found neither Bates nor Smith had judgment for such work as that in the Canon and was forced to work the party myself even in detail. The fact is, I have rarely in all my experience found a man so totally inefficient as is Bates. Smith is a better worker, but with all his knowledge of theory, a mere child in practical judgment; a mere man of formula or routine.

Thus I worked on this difficult line, where it is a good day's work to make half a mile, until Wednesday the 10th inst. when to my great regret I was taken down with an attack of inflammatory rheumatism which on Thursday drove me out of the field, and compelled me to make for the city where I have been under the doctor's hands ever since. I am now convalescent and hope in a few days to be out again. The attack was no doubt induced by a general derangement of the system, which corrected, will, I think, soon cause all other irregularities to disappear. Before I left the Canon most of the line through it was finished, and the contractors were fully at work on my line.

The disarrangement of my parties by Seymour, the correction of this irregularity; the close personal attention required by the location in the Canon, and my illness, constitute the only apology I have to offer for failing to write you as stated in my telegram, or to keep up that regular and frequent correspondence which you have a right to expect, and which it is always a pleasure for me to extend to you.

In regard to progress of location; three lines have been run at head of Echo, neither of which pleases me. Since these have been completed, their general features and probable cost made known, & I have not been able to be on the ground and must see before I can decide, as I am satisfied that improvements can be made. We have done much work at this point; running not less than 60 or 70 miles of line carefully.

Let me here remark that, notwithstanding Col. Seymour's charge, that the adoption of my line would be suicidal policy to the Company, I am willing he should locate any other line he pleases over this ground, offer all the arguments in its favor, and make all the objections against the line which he can bring forward, and I will engage to meet every one of them in a manner satisfactory to yourself or your Board of Directors, or to any other body of reasonable men. Ask him to take any part of my line and specify his objections and I will undertake to answer them. I want no general charges, they must be specific and tangible. If objections exist to my work they can be easily pointed out specifically. Let him do it, and let him at the same time see that he is prepared with a better location in each case for he will surely be called on to offer it.

One remark I wish to make in regard to 90 ft. grades at head of Echo. This portion of your road being more exposed to snow and for a longer period of the year than any other, I think a grade of 90 ft. any where else will present less difficulty in the working of the road than it will here; and therefore no where else should you expend more money to secure a low grade than at this point. My opinion is that you will find a grade of 90 ft. in the Black Hills a smaller objection than at the head of Echo, and by no manner of means therefore should it be exceeded, rather, if possible, reduced.

I should have stated that Seymour never consulted me when he telegraphed about grades, as you wrote in yours of 3d inst. and if he stated that nothing less than 100 ft. was decided on at that time, he must have referred to decisions exclusively his own, for he knew I then favored and strongly urged a 90 ft. grade and Reed coincided with me. I think no great difficulty will be experienced in building temporary tracks, should they ever become necessary.

I may be allowed to say it is my fault you have not heretofore had profile and map of Green River line. When you telegraphed me to deliver copy to Mr. Reed, I thoughtlessly assumed that a delivery to him was a delivery to you. You shall have a copy immediately. I hope also in a few days to send you copies of other locations and of Maxwell's explorations. When I get out again I hope soon to see the present pressure over, and arrears of work brought up rapidly when I will let you have papers without further delay."

There had been a good deal of talk about Railroads in China and New York parties had been urging me to take hold of them.

The Hon. A. Burlingame was in this country as a Representative of China trying to interest parties in a railroad in China and on June 15th, I wrote him the following letter:

"I have for several years been anxious to visit China with a view to endeavor to introduce and build railroads, believing it would be one of the best and quickest agents to build up and bring into communication that empire. As to my integrity, ability and standing in the United States as a projector, civil engineer and builder of Railroads, you can easily learn. As the Chief Engineer of the Union Pacific R. R., I was one of its original projectors fourteen years ago, and hope to complete it within a year. I can command any amount of capital, if it was required, upon any feasible enterprise of that kind, believe I could so develop the facilities of rail transportation in China as to make it there, as it is here, a national blessing."

1868
On June 21st, Mr. Blickensderfer wrote to Mr. J. L. Williams, the Government Director, his views of the conditions of matters on the road in answer to letters from Mr. Williams to him, as follows:

Echo Canon, Utah.
"Yours of 1st May was duly received, but as it did not seem to require an immediate answer, I have deferred writing until now.

I begin to see plainly the reasons of your urgency for the location of this work, as expressed in your previous letter. Mr. Reed and Seymour are here; arrived in this country two weeks ago and although I think they have seen enough to satisfy themselves of the difficulty of locating line here early in the season, they are now less urgent to hurry up the work, and to adopt temporary expedients. I found Seymour a strong advocate of high grades and cheap alignment, urging the adoption of grades of 100 ft. or even 116 ft. per mile to cheapen the work, just the reverse of what he was last season in the Black Hills, when he strenuously argued that even if an 80 ft. grade was attainable, the extra expenditure of \$100,000 to obtain a grade of 86 ft. per mile rather than one of 90 was no object. Reed seems less disposed to adopt grades over 90 ft. per mile.

They have handed me an order of Durant, clothing them with full power both to direct, control and even to rescind former orders of Chief Engineer in regard to everything, and appointing Seymour acting Chief Engineer in Dodge's absence. What this will all result in I do not know, but I entertain great fears. I find Dodge's views as expressed in his notes on old profiles and Maps, and as given in our personal interviews exceedingly correct and pertinent. He seems to grasp the general position of things well, and my estimate of his engineering capacities has been by no means diminished by my observations since I am here.

I am so much hurried, and have been so much delayed by climatic difficulties that I shall not be able to do for this location what I could wish; yet I think I shall nevertheless be able to get a pretty good knowledge of the country and of its engineering capabilities, such as will protect me from making any great mistakes. At Green River I succeeded pretty well, getting a line over the summit between Green River and Blacks Fork with 60 ft. per mile. On the rim of the Basin I shall get a line with 75 to 79 ft. and here one with 90 ft. Whether these will be permitted to stand, I cannot say, of course. On the east side of the Wahsatch and on the west side of the rim, that is no whether in Bear River Valley, and will there be any grade exceeding 60 ft. per mile, and thus a train once on the summit of the Black Hills can reach rim of basin with no ascending grade exceeding 60 ft. to overcome and vice versa. A train once on the summit of the Wahsatch can reach Sanders without encountering any ascending grade over 60 ft. per mile. This result I have labored to obtain, and have succeeded without heavy work.

My opinion is that a grade of 11-100 or 52.8 per mile would have been obtainable without great expense between Sanders and the rim and I incline strongly to the opinion that I can overcome the rim of the basin without exceeding 60 ft. on either side; thus sending a train from Black Hills to Salt Lake Valley with no ascending grade exceeding 60 ft. in the way. Hudnutt tried this and failed, and I told him to go on, but I am very loth to give it up and think I shall request Gen. Dodge to allow me to re-examine that location (on eastern side of rim of Basin) after our hurry is over a little.

I think with good weather I shall have the entire line of Salt Lake Valley located by 20th June, or very nearly so, and we can set contractors to work any time after the present week.

In regard to showing my previous letter to Gen. Dodge and sending extracts to Ames, &c., I did not expect it, but I have so much confidence in your discretion and judgment in such matters, that I will not object to any use you may deem it proper to make of my communications."

Mr. T. C. Durant who was still in the West watching matters, but without authority, wired Mr. Ames as follows:

"By slight changes on unfinished portions of the line, we reduce quantities and save \$100,000 at head of Echo and \$150,000 at Weber and improve line."

"There was not a word of truth in this dispatch and it was only intended to demoralize the Company.

On June 27th, ¹⁸⁶⁸ I started west with Mr. Ames, Mr. Alley, Lathrop, Mr. Williams and others. We reached Cheyenne by Sunday morning. At Cheyenne we met the citizens of Denver in relation to the branch which they were building and arranged with them for pushing their work and completing it.

On June 28th, ¹⁸⁶⁸ I wrote Mr. Ames on location of shops on line as follows:

Omaha, Neb.

"To avoid any delay in the building of permanent structures east of Cheyenne this fall, and also to avoid any delay in the completion of the shops at Cheyenne, Laramie, at or near North Fork of Platte, at Bitter Creek and at Green River or Black's Fork, I would order the Superintendent of the road to push forward all these works where the contractors, for want of time, fail to commence or complete them.

I also consider that eating houses should be immediately built at Shell Creek, Cheyenne and such points west as the Superintendent may deem proper.

The location of the shops at North Fork of Platte, at the town of Benton, will be a difficult matter on account of distance from water, and upon an examination it may be found best to build them at Rawlins Spring, 12 miles west. At this point, a shop, 100 by 75 would be sufficient for a machine shop, Blacksmith shop &c. under one roof for the present, and a 20 stall round house would be all that is necessary; by then building a 10 or 20 stall round house where we strike Bitter Creek, we would have an 80 mile run from Rawlins Spring and 96 from North Fork of Platte and then by placing the next and larger shops in Black's Fork, about 21 miles west of Green River, would give another 80 mile run from Bitter Creek and be in a good position for the next shops, to be put at some point in Echo Cañon. If it is decided to build on Green River instead of Black's Fork, then it would be only 57 to 60 miles run. Whether located at Rawlins Springs and Black's Fork, at North Fork of Platte and Green River, it is all important that these shops should be put in process of construction as soon as track reaches these points and the stone should be quarried before that time, so as to have them completed and the machinery in them and in operation before cold weather comes.

I also consider it all important that the permanent structures be immediately commenced and pushed to completion east of the Black Hills this summer and fall and an order to the Superintendent will, no doubt, accomplish everything that is required to get the road in good, running condition for the winter and assure the government that the temporary work being replaced by permanent structures and the road being brought fully up to the standard required to make it a first-class American road."

I arrived at Ft. Sanders on the 29th and met there Mr. Evans who seemed to be getting along pretty well with his work. He complained of some of Mr. Reed's engineers; that they did not aid him with the alacrity and spirit which he desired.

On June 30th ¹⁸⁶⁸ I went to the end of the track near Rock Creek. I visited the coal mines which I had opened at Carbon and found an eight foot vein. We took ^{wagons} hacks and went west to tunnel; This work was a bad job; should be faced up on south front to solid face and flush with first shoulder. Line west of tunnel should have cut point near Dowling's camp. Arrived at North Fork at night and stopped with Col. ^{Richard} Dodge who was in command of Ft. Steel. (Col. Dodge was no direct relative of mine. He came from Trystum Dodge, who settled Block Island, and had been in the army all his life.)

I found that the timber and ties were being floated down the Platte, coming from Encampment Creek, about forty miles south. The bridge across the North Fork was well under way. I returned to the end of the track from here, then to Laramie City for the purpose of meeting Mr. Ames, Mr. Reed and Mr. Evans for the purpose of adjusting the troubles existing between them. Gen. Williamson joined us here. Mr. Ames showed me a letter from Mr. Seymour in which he said he had found nothing satisfactory

Include in
memoir, etc

or favorable out west as yet. Location should have been made last year. This made no impression upon Mr. Ames because he knew that that was impossible. Everything was adjusted satisfactorially by Mr. Ames with Mr. Reed and Mr. Evans. Mr. Reed informed Mr. Ames that the location in Salt Lake was completed, except at the Narrows and the head of Echo and the only delays there were caused by the lack of tools for the contractors. This statement did away with all the complaints of Mr. Durant and others that they were waiting for location.

Mr. Reed also approved the line which had been run by Mr. Blickensderfer and adopted by me and was utterly opposed to the changes which Seymour had recommended and talked very plainly to Mr. Ames as to his opinion in regard to the way matters were being handled. He told them that the location West of the Missouri River was an able one and if they would only let them alone and let them work out the plans which had been laid down by me in the begining that there would be no trouble in carrying them out, but they were continually changing and interfering and it was almost impossible to meet the views of the Company. He told them that every change and every order issued by them interfered with the operations on the ground, ^{was costly to the company and} was detrimental to the surveys and only kept the engineers and contractors undecided as to what they should do; also that we had the active support of the military authorities and the Mormon church.

I have never known Mr. Reed to be so positive and decided about these matters. He told Mr. Ames that it was very embarrassing to him to have men from New York right with him recommending things as coming from New York which he did not like to oppose but which were against his judgment. He said that the only object of Col. Seymour was to get rid of the Chief Engineer, if he could.

I returned from the end of the track again, looking over the location. There had been submitted to the company from the Laramie River west, two locations. One by the way of Cooper Lake through to the Rattlesnake Pass and the other following the waters of the Rock Creek around by the Medicine Bow. The direct line was with

60 foot grades and considerable heavy work, but it saved 20 miles in distance. This is the line which the Union Pacific railroad built in 1909. The line by way of Rock Creek was in the valley, was of light work, but heavy curvature and about the same grade and twenty miles longer, but the contractors claimed that they could build this line in one half the time, and their statement induced the company to adopt the Rock Creek line, against my recommendation. At a great many points on this line, I saw that the work should be increased to better the alignment.

On July 4th¹⁸⁶⁸ I camped at Percy Station, at the East base of the Rattlesnake Hills. It was twenty-nine miles by line and 30 by odometer to the tunnel; Mary's Creek was filled up in three places by stone; also two points at the canyon two miles below. ^{to avoid bridging.} Troops arrived in Camp at 3 P. M. I received a telegraph here from Mr. Blickensderfer that he would turn over the located line to the contractors at Echo on Monday or Tuesday. I wrote Mr. House from here that our agent, Mr. Ransom, had sold about \$10,000 worth of lots at Benton, 10 miles west of Ft. Steel, but I was in doubt whether this would be made the division point.

I wrote Mr. Ames the following letter from Benton, the then terminal division:

"I arrived here Saturday night, passing a second time over the graded road.

I have great doubts about the policy filling up the banks solid over Mary's Creek, and depending upon the filtering of water of a stream twenty-one miles long through stone banks. They have filled it up at five crossings in this way. It may answer the purpose a year, but it seems to me the sediment that would naturally flow down in high water in Mary's Creek must to a great extent, fill up the crevices and thus dam up the water. I also notice that no water way has been left for the side drainage of the country. This is all right providing we get in the stone culverts before next spring floods. It seems to me that a good strong masonry force should be organized to go to work at all these points for such rains and snows as we had two years ago on this Creek would tear out any bank that we have got.

When Mr. O'Neil located this line in March, the entire valley was overflowed from Brown's Pass to North Fork of Platte, and he estimates to pass the water of Mary's Creek, that it will take bridges of 20, 30 and 40 ft. span. I suppose that it is the intention of the contractors to put in the bridges and culverts for the side drainage after road is built, which is all right, only they must be sure and get them in before next March.

Again there is time to put in all structures west from Bitter Creek. Permanent culverts, bridges and all. The stone is handy and plenty of time providing you go right at it.

The Bridge over North Fork Platte River could have been built of masonry and truss put on, by time track reaches here, and you must get it in as quick as possible, as the Shod Piles only drive 5 to 8 ft. in the hard bottom, while ^{standing} out of water then 25 to 35 ft. in height of pile and trestle to Grade line, not a very safe or reliable structure.

I hope at any-rate, west of Green River the culverts and Bridges will all be built of stone now, as the work progresses, as it will save the cost of the temporary work, and there is now plenty of time to do it. The bridge men here will soon move to Green River to put in Bridge there.

They have got the Boom in here and will commence running ties down soon. Mr. Lockwood who is in charge, says they have 300 men cutting, and he will bring here within 60 days 400,000 ties. They come in now with rafts of logs, and a good lumber business will be done here.

I think the tie men are fully out of the way. They run the river from 40 to 125 miles.

Twentyfour miles west of here, 1/2 mile south of track, they have opened one of the vein^A of coal I discovered last year. It proves to be a 12 ft. vein, and fully as good or better coal than the Creighton Vein. I shall also show them the vein on Separation Creek so that they can open that, also one or two on Bitter Creek. All the coal is turning out better even than I hoped so that the fuel question is solved.

Some of the wells so far do not promise much. 25 ft. down they strike heavy veins of water, but it is brackish--alkali, salt and soda, but I believe if we should go 80 or 100 ft. through the slate and coal, we should get good pure water, and this brings up the question of the shops. Already \$10,000 worth of lots have been sold on the supposition that this would be the turning point. If we should go to Rawlins Spring, we would have to give the persons who bought here. Lots then in exchange for those here. I am inclined now to believe that we better build shops here, put a round house on Bitter Creek, and make our next shops on Blacks Fork, 20 miles west of Green River. This will give us nearly equal runs, enable us to lay out a good town on Bitter Creek and another at Blacks Fork, and reap the benefit of our short stop at each.

Mr. Williams desires me to say to you that he has examined the location from Browns Pass to North Fork of Platte, that it is an excellent one, bold, judicious and all any one could wish. He says it only wants the permanent structures in it to make it complete and that he is very much pleased with it so far.

I notice on re-examination of line, that in laying track they do not curve the rail on the sharp curves sufficiently. On a four to six degree curve, the curve as laid looks like and are a succession of tangents, and although they bend the rail a little, it is not more than enough for a one degree curve. Unless this is changed, you will find it very detrimental in the future in running the road, as it cannot be remedied without a full relaying of iron around all curves. When the curvature does not exceed 2 degrees it does not show much, but over that it shows plainly and is a bad failure.

The force on track laying is about 3 to 3 1/2 miles per day but for unavoidable delays as you said, it is hard to average over two miles and Mr. Clayton ^{the foreman} said it would be far better to put on an average of two miles going and make sure of it, rather than to hold force up to 3 and 4 mile going, which he seems to think it will be hard to deliver material for.

At any rate, I would have attention paid to track on all curves, and the iron bent to its proper shape for all degrees of curvature. Please give instructions in this matter."

I received a letter here dated Omaha the 6th from Mr. Snyder in which he said that he had a long private talk with Mr. Ames and Mr. Reed on the trip from Laramie to Cheyenne. He said:

"Mr. Reed opened up all his troubles and gave me an opportunity of having some plain talk with him. After the conversation, Mr. Ames told me and told others that he was more than ever convinced that Reed was not competent to run a very large machine. Mr. Evans has not repudiated any of Reed's contracts, but he found the accounts in the office in bad shape, in many cases there were no written contracts or memorandum and Evans was obliged to wait for instructions from Reed before he could settle. Mr. Ames expressed himself much pleased with matters on the road. Shops at Cheyenne started. Men getting out stone for the bridges. Will put up eating houses at Cheyenne and Shell Creek."

On July 6th ¹⁸⁶⁸ I also received a letter from J. L. Williams, the Government Director who had accompanied me to the end of the track. He says: "Have sent by telegraph to President and Vice President earnest remonstrances against any grade over ninety feet. Will send copy to Secretary Interior and each Government Director."

I also received a letter here from Mr. F. S. Hodges in which he said that lines had been run through Ogden river, Box Elder Creek, Cache Valley and tributaries; that it had developed the fact that from Soda Springs southward no route exists at all comparable with Echo, except it be by right hand fork of Blacksmith's Fork which to his great regret he was unable to explore. In letter from Pass North of Pilot Peak.

He says: "Upon the line with which I am now engaged 128 miles have been run from Promontory Point, 65 miles to Humboldt Wells remain. In relation to the Mud Flats or Great Desert, you are aware that opinions conflict. From my own experience I would judge that they would prove very slow material to move, and when cast up would have to be protected from both wet and dry weather."

I cantered my horse over an apparently dry and hard desert; my lightly loaded wagon followed; but the wheels cut down to the axle while between the spokes the soft clay filled in until each wheel appeared as though a mason had filled them in with mortar and smoothed them over with his trowel."

On July 7th ¹⁸⁶⁸ I marched 27 miles and camped at Twin Lake Station. At Rawlin's Springs Station is a well down 45 feet with little water. Will have to take water from Rawlins Springs by pipe to tank. Arrived at Twin Lakes at 2 P. M. Indians killed two men at Rawlins Springs two weeks ago. Attacked camp one mile west Sunday night. Attacked Reed at Twin Lakes Monday night but did not succeed in getting any stock.

I arranged with Gen. Williamson to take charge of the townsites at Green River and he returned from here to Omaha to get the papers, maps, etc, in relation to that place.

1868
On July 8th, we marched 31 miles and camped at Whitman's Wells, ten miles west of the Continental Divide. Coal bank in bluff south shows 8 ft. vein.

1868
On July 9th, I made Bitter Creek near Chrisman's Camp. Marched 24 miles and established the Red Desert Station; also Clay Buttes station just south and on west rim of Red Desert. Water can be had at west end of Chrisman's camp. Crossed Bitter Creek summit which is 111 ft. lower than main divide. The line today is remarkably direct and well built; banks high above snow and very few cuts. Coal shows itself in the bluffs, and looks like good coal.

1868
On Friday the 10th of July, I camped at Steamboat Buttes; met there Mr. Hurd, engineer on Construction. Line down into Bitter Creek is excellent, direct, good grade and avoids snow. Established Bitter Creek station. Rock in bluffs sand stone, very soft and that exposed not good for round house or structures. We marched 16 miles by line and camped in sight of stage road at 11 A. M.

1868
On July 11th we camped at Rock Springs. There were several coal veins here; one of 8 ft., 3 about 4 ft., 3 about 3 ft. and one of 6 ft. the upper and middle veins develop the best. Hall has about 6 miles graded on his 20^{miles}. Bent has gotten well started on his 20 miles and Carmichael has most of his 6 miles done and Casement is just starting on his ten miles. Bridges will be troublesome. It will be necessary to cross Bitter Creek with Truss bridges and it will require pile foundations. Piles will have to be hauled fifty miles. Camped 12 miles from Hot Springs, Quaking-aspen telegraph poles can be obtained and about 25 miles south on breaks of Current River pine can be had, but hard to get at.

1868
On July 13th we marched 9 miles to Green River. A good force is at work but we have had two strikes. They arrived on the ground May 15th and opened work May 16th. Maloy has been here two weeks on his work west of rim, and has rested five days. Six^{construction} trains have passed and ten more ~~will~~ are between here and Laramie. The trains have been about thirty days on the road from Laramie to Green River. From here I wrote Mr. Ames, Dillon, Evans, Snyder and sent word to O'Neil to push on to Green River.

On July 13th, ¹⁸⁶⁸ from Green River, I wrote Mr. Oliver Ames a long letter giving a general review of my examinations, as follows:

"I arrived here today after travelling every foot of line from North Platte west. I had Mr. Hurd with me, the engineer in charge of construction and we gave all matters a critical examination, and straightened that which needed.

The work I can give you a better idea of by taking it consecutively and separately.

1st Grading. Up to North Fork, you know about it; west to Bitter Creek it is nearly all done, will be out of way by Aug. 1st. A little heavy work at Rawlins Springs needed pushing. I think it will not retard track.

In Bitter Creek Valley, Hall was first 20 miles. He has about five graded and Mr. Hurd had him put a force on his heaviest work.

Bent has next 20 miles, he is well under way. On his East end is heaviest work and will be all done in six weeks. Carmichael has next six miles and is mostly done. Casement next ten miles and his subs are getting stretched out on their work. The heavy work at Green River has laid still since July 5; men on a strike, but go to work today.

Bridges. Crossing from North Fork to Bitter Creek, you will have no trouble, and will have to put in pile or trestles; had you commenced soon enough, you could have put in a good many stone drains.

The quarries at Rawlins Springs are good and west of that, at one or two points good stone is to be had.

On Bitter Creek is the rub; the wash there is very bad, some twelve Truss Bridges, 80, 100 and 150 feet each will have to be built. The trestle Bridges for side drainage, will be difficult on account of foundation. The small culverts and water ways, should be made of stone, plenty exists almost all along the line, fit for this purpose.

I wrote Mr. Evans fully about it.

The trestles I should put down about four feet below bed and fill up with loose rock, and put on mudsills.

To make them safe, they ought to be on piles, and in some places will have to be the streams are so deep that piles cannot be had long enough to carry them to grade.

For the Truss Bridges, I would put in the pile foundation right off. Put Trestle on that and put truss right on, putting in Masonry between trestles as soon as convenient.

To put in temporary Pile bridges will cost largely. Piles are no nearer than LaCledé, an average haul of 50 miles and it would take a large number. Seems to me that 100 ft. truss bridges could be gotten in as quickly as the pile and thus save us the cost of the pile which will come to from 75¢ to 1.00 per running foot. I recommended to Evans to send out a good Supt. of Masonry to select rock and see to the putting in of stone drains. This will save one half of the trestle bridges, single and double, boxculverts, dry masonry laid up will do if well put in, and save us future cost. It is even cheaper than putting in wooden culverts, the materia being so handy, and there is plenty of time; most of contractors can put them in if a person is here to see that it is well done.

3rd, Water. Nothing has been done except at Benton and Rawlins Springs, over dry divide for water, but I had men go to work at each station to sink wells, immediately and Hurd telegraphed for boring apparatus. I know we will get water, but we ought to have been at it long ago, it may lay deep and through the rock. Several of the wells show water but it is bad and we must get below the surface water, and we cannot give too much or too careful attention to this. After reaching Bitter Creek, there will be no trouble for water.

Stations. We established all along though havng reference to most favorable place for water, distance, proper grade, coal &c.

I concluded we better put our shops at Benton, the town is a fair location is near North Platte River, down which we can get plenty of timber, ties, &c. and the sale of lots was large; the only

draw-back is water; that we can take out of Platte is desirable. The town is 100 ft. above the river; the permanent bridge here should be under way as soon as possible and leave the temporary bridge for the military to make a road bridge of, which will give us quite an easy route from town to the lumber and tie yards.

At Rawlins Springs, we can take the water into tanks by pipe, and it better be done.

Stone here is good and can be used for round house and machine shops at Benton, Quarry easy of access, &c. The stations are Benton, Rawlins Spring, Separation Creek, Continental Divide, Red Desert, Clay Buttes, Raha, Bitter Creek, here I shall lay out a town and it will no doubt be a town as soon as we reach it, it is not a very inviting spot, but the best to be had, we will also have to build a round house here. Black Buttes, Point of Rocks, Salt Wells, Rock Springs and Green River. Stone for Round House at Bitter Creek, I think we can get about 5 miles west of station. A gray sand-stone is out there and if in sufficient quantities will do on the top layer on most of Bluffs looks durable enough.

Coal. There is plenty of it. The veins at Separation Creek are clear, 8 to 12 ft. thick, one 12 ft. vein 3 1/2 miles away is being opened by a Mr. Metcalf from Cheyenne. I ordered two veins near track opened enough to develop width of vein and quality; the vein in Red Desert I also partially opened veins about 6 ft. thick but quality of coal not as good, by going in it may prove better. Next is Point of Rocks. Here with 3000 ft. of station are five good veins ranging from 5 to 8 ft. thick, and any quantity can be mined, and by shoots run down from mines into cars, coal does not yet look as good as Separation Creek Coal but will make a good fuel.

Twelve miles east of Green River near line and at Green River, are good veins being opened by graders for blacksmithing purposes.

Location. The located line is an excellent one. Mr. Williams is very much pleased with it all along from North Platte to Green River. It is a bold, judicious, the ground evidently studied and good advantage taken of it; the grade is kept out of cutting and laid high to avoid snow, while the alignment is good. Line down Bitter Creek, necessarily crosses the Creek often. Valley is crooked and torturous but we get good line by taking advantage of its bends, as we get towards Green River avoid the Creek more than we do above. In many places we change the channel.

I am much pleased with this location; it meets more fully my views and wishes in the matter and looks like a railroad.

Mr. Williams says it is very fine, and he is a pretty severe critic; he is also well pleased with way most of work is done; says he sees the difficulty of at once putting in stone structures, that track must be down first over great portion of country, and his judgment on best way to meet many of these bad foundations on silty bottoms, is often good.

General. The heavy work six miles east of here that Carmichael is on the Co. Work is well under way, and considerable had been done up to July 4th, when all hands struck, and nothing was done from that time till today, when 300 men went to work. He has one heavy cut which is being forced. I think he will get out of way before track reaches here. The eight miles of work west of Green River, two heavy cuts and two large banks, that Maloy is doing for the Co. has not had much done on it.

Maloy has been here two weeks, worked four days. His men went to work today but he has only a few. The cut is side hill and can soon be worked out, but the banks, he thinks, will take 90 days to finish, says he needs 500 men. The great trouble with him is want of tools, cars, scrapers and corn. This is also the trouble with Brigham. He has no tools, some six trains, some six trains have passed here, were thirty days enroute from Laramie City and were mostly loaded with provisions. The Mormons came here and met them and took off the scrapers.

They have now 11 trains between here and Laramie loaded, but it is slow work and it will be sometime yet, necessarily before fall farmers can be put on the work, here or at head of

Echo, or in Weber. The light work can be easily gotten along with, and as soon as tools arrive large force can be put on heavy work.

I guess they are pushing matters all they can; but 300 miles teaming of everything is tedious.

From head of Green River, they are getting out considerable number of ties, they are putting in Boom here and propose to raft down 60000 this month.

The line here gives no good opportunity for town here, shops or anything else and we best go to Blacks Fork for our Base.

They have laid off a town here similar to the North Fork of Platte ~~Town~~ ^{they} have a private organization and sell lots &c. They really have no right, but I see no way to help it. Their site is on the low bottom and Green River sometimes covers it four ft. It is now within a foot of going over it. That is the trouble of our doing anything here, more than a simple station. The ground overflows and west of River we are climbing with a 60 ft. grade.

I will lay out a small town here but reserve the big one for shops on Blacks Fork, 14 miles west. Mr. Reed thinks that is best place and it makes our runs more equal. Location from here to the valley is about completed. I shall push parties west as fast as I can. Maxwell who is west of Lake has located ~~some~~ 30 or 40 miles of line west of Weber Canon, and Hodges is well on his way to Humboldt Wells, with his Preliminary. It will, however, be some time yet before they can open much of heavy work in Echo and Weber for want of tools."

1868
On July 14th, I moved to camp #10 on Black Fork near the South Pass road and examined the line closely coming out of Green River, made suggestions for change of line. Received a telegram here from Mr. Blickensderfer on the sounding of Salt Lake. Maxwell reports 22 feet of water for more than one mile to Mud Island. It shows that the crossing here is impracticable.

1868
On July 13th, I crossed the Muddy on the Ft. Bridger and South Pass road. Location is good to Ham's Fork. It will require four bridges, 350 feet each over Black's Fork; from the top of the Butte today I could see Pilot Buttes, Uintah Range, rim of Basin, Medicine Buttes, Aspen Hill and Bridger Buttes. No rock on Black's Fork or on Muddy.

1868
On July 15th I received a letter from Schuyler Colfax, Speaker of the House, stating that if Congress adjourned by the 27th of July, he and his party would leave Chicago October 3rd for the end of the track and asked cars and accommodations for quite a large party including, A. S. Richardson of the New York Tribune; also requested stages to be furnished the party from Cheyenne to Denver.

1868
On July 16th I camped at old Ft. Bridger. Examined the line from South Pass to the road going to Ft. Bannack. I received a large mail here, from Mr. Ames, Snyder, Duff and others, which I answered. At Bridger there is good stone for building purposes.

1868

On July 16th, I wrote Mr. Ames as follows:

"I arrived here today lay over one day to refit, then go West. I came all the way over line. The location from Green River west to Blacks Fork, I wrote you about, work, &c. Location from Blacks fork runs up that valley to mouth of Muddy, and up Muddy to Rim of Basin. all plain light work. The line is a good one, the most expensive feature is four bridges over Blacks Fork, say 300 ft. each and up to here 11 bridges over Muddy, about 60 ft. each.

After examining the line closely, I made but one or two slight changes; the engineers have studied this ground closely; there is no doubt of that. I think we will be obliged to put in wood bridges, first, the stone that we find near the line is too perishable for piers and abutments to bridges, but one layer of it will do for drains, and it is a question for you to consider. Now the bridges shall be constructed, piles are comparatively handy, and I believe I should put in the pile foundation for piers and abutments and put trestles on them to support the truss bridges, until such time as the road is built and we can obtain stone from here or west and put in the piers and abutments. If you think you have not time to do this, then a temporary pile bridge to one side of main line will be best. It would be cheaper in the end to put it in as I suggested first but you may fear the want of time and delay in getting forward the trusses in time. I notice that ice break ups in Blacks Fork are bad. There is no one at work on line as I can learn from Maloys, west of Green River, to near Bear River, 100 miles location was turned over to contractors the last of June or 1st July.

It is mostly light work, and I guess Mr. Reed intends to put the force east of Green River on it as they finish up there. They are now opening up the heavy work at head of Echo, that we have had so much trouble with. We turned the line over several days ago and as fast as tools come up they will cover it with men.

In sounding Great Salt Lake, when I commenced it, I found 22 ft. of water for one mile. This is double the depth that Stansbury got, and Mr. Reed says the Lake has raised seven feet since he was here in 1864. We get a fine line around Promontory Point, but I am afraid I shall have to abandon it on account of deep water in Lake and go over the Point, am now locating over it, so as to have a line both around and over. Mr. Hodges party reached Humboldt Wells yesterday so that we have now got one line into the Humboldt. He will work East from that point and we will soon have that location made from North Point of Lake to Humboldt Wells.

I desire you to telegraph me at Salt Lake if you want me to locate the branch to Salt Lake City as I shall push right west from there so as to look over the Humboldt line, going both sides of the lake. However, I suppose it is very little use for us talk about south side as the C.P.R.R. are determined to go north. Have filed their maps on that line and got them accepted, so that is a virtual settlement of the question under the law, even if we should raise it, the President by his action has virtually decided the question in advance.

I see by the papers that a Mr. Fisk has commenced a suit against the C. M. what effect will that have on work, bonds, stock &c. I enclose letter received from Gov. Evans of Colorado.

Will write next from Salt Lake, I desire to hear from you there. My work is so near closed up east of Salt Lake that I must push west of it as fast as possible.

Blickensderfer is spending his time now reviewing line to see if it can be helped on parts they do not want to work on. Thinks we will yet get 60 ft. over the rim instead of 70. I shall look into that tomorrow."

On ^{1868.} July 17th I received a dispatch from Mr. Snyder that the track was at Benton, 660 miles. Also a dispatch from Mr. Chas. Tuttle, Secretary of the Union Pacific Company, stating that Mr. Durant, Vice President, is authorized to supervise the affairs of the company along the line of the road including surveys now made. Officers and employees are subject to his direction. He leaves tonight for the west. This dispatch shows that the company had again turned the direction of matters in the west over to Mr. Durant and that I might look for trouble from now on.

"I met here Washakie of the Snake Indians. The entire Snake village is camped here, having received their annuity. I entered into a treaty with Washakie for the protection of the

Snyder's
letter

railroad through their country, agreeing with them that if they would protect the line from Indian depredations and prevent his own men from committing any depredations upon it, that he and his tribe should be carried over our line free, whenever they desired to go. That agreement was carried out, literally, as made by me, by the running Department. When the road first began running trains, the Indians flocked down to it and rode on the freight trains. It was not an unusual thing to see on the top of the freight cars forty or fifty Indians with their blankets, children and squaws. They did not try to ride on the passenger trains, and so far as I know the company carried out this agreement until the Shoshoni tribe, of which Washekie was chief, moved to the Wind River country. Waushekie was very friendly with me, although the troops under General Connor had destroyed, in the middle of the winter of 1863, one of his villages on the Bear River, Utah, and in the fight killed every Indian opposed to him. This had given the Indians an object lesson as to our power and ability to do whatever we agreed to. The bones of these Indians are still to be seen in the ravine in which the battle was fought. Connor marched from Camp Douglas with thermometer below zero, surprised the camp and gained a great victory. Several of his men were found frozen. Col. Knight who was in command at Ft. Bridger, called at our camp and I had a full understanding as to the military protection, if any was needed."

On July 18th, ¹⁸⁶⁸ we marched 20 miles and camped with Col. Hudnutt on the rim of the basin. One line is very heavy--the other very light. I was on the work all day with the party. Mr. Blickensderfer joined us, having closed up all his work to Salt Lake. The only point then giving us trouble was the crossing of the rim of the basin. We were endeavoring to go over it on a 60 foot grade.

Hodges reported that he had reached the Humboldt and Maxwell was at the North Point of Salt Lake, just over Promontory Point. I spent the 19th in going over the line from the Muddy to summit at Piedmont with Mr. Blickensderfer, finally adopting the 60 ft. grade line.

On July 19th, I received a letter from Mrs. Dodge which was as follows:

Council Bluffs.

"Hoxie was over this morning. He told me the company had telegraphed you to return with profiles, &c. Something is to pay with the Central Pacific. I think it will be too bad for you to return over the hot plains and then go back, and I hope you will not do it. I hope to hear from you what is the matter; as to being ordered about everywhere by Durant, I would not do it, and I have thought lately you could do better off of the road than on. How can you like being gone so much and having so many times to fight men like Durant? Still I dislike saying anything for fear you will think it is from selfish motives. It seems to me you have harder work than any man who ever built railroads before. They are trying the same game with you that they have with Reed, and I think there is more in Seymour's being out there now than you think. I don't believe any small business would keep him out there so long. He is cunning and crafty, and you had best look out for him. I don't think much of the men that keep him, and it would be just if you left the road to him and them, and take care of your own business interests or build other railroads."

On Tuesday, the 21st, ^{of July 1868} I camped at Yellow Creek after marching 25 miles. I received a dispatch from Mr. T. C. Durant to meet him at the end of the track by Wednesday or Thursday, which it was impossible for me to do.

I met Mr. Reed enroute to the end of the track to meet Mr. Durant. Mr. Reed informed me that he had let all the work from Green River to the mouth of Weber Canon.

On July 22nd ¹⁸⁶⁸ I marched 32 miles and camped on the Weber, examined the location over Echo summit and considered it good.

On July 22nd, ¹⁸⁶⁸ the Governor of Montana wrote me in relation to plans ^{for a branch} of the road to Montana giving account of the large meeting and the resolutions passed:

Virginia City, Utah.

"In behalf of the committee appointed to correspond with you regarding the construction of a branch of the Union Pacific R. R. through Montana, we have the honor to inform you of the action of a large public meeting assembled in the Supreme Court Room in this city on the 11th ultimo, pursuant to a notice published in the Montana Democrat of that date. We herewith enclose a printed copy of the proceedings of said meeting; the deliberations were attended with considerable enthusiasm, and we have no hesitation in asserting that the opinions expressed are favorably entertained by a large majority of the citizens of Montana territory.

We see that resolutions of the same favorable character have been adopted by the citizens of Deer Lodge County, a printed copy of which we also enclose. We desire to state that the citizens of Madison County, as also the majority of the territory, are sincerely desirous of rendering you and the company which you

represent all the assistance within our power. Our people one and all unite in eulogizing in unmeasured terms the energy exhibited by your company in the execution of such a gigantic enterprise.

We would therefore most respectfully invite you to correspond with us in relation to the important enterprise in which we are all so deeply interested, and will promptly carry into execution any suggestions you may make tending to enhance the interests of the much desired Branch railroad."

On August 15th, ¹⁸⁶⁸ I answered the Hon. James Tufts, Governor of Montana, as follows:

"I am in receipt of your communication of July 22nd in behalf of a committee appointed by the citizens of Montana to correspond with me in relation to Branch road to Montana. I have no doubt but what your most speedy and feasible connection with the east and the west is by a branch road, leaving the U.P.R.R. some point west of mouth of Hams Fork.

A partial examination of the country has determined its feasibility. To build it will require Government aid.

The present business of the country, Your territory, would not justify its being built by private capital alone.

Should Government aid be obtained, the branch could be completed in eighteen months, perhaps, less, from time work was commenced on it.

Your proper course, it seems to me, to secure the building of the branch, is to appeal to Government for the necessary aid, no doubt but you would have the support of the Union Pacific R.R. Co. in any practicable measures that would assure success to the project!"

This branch was later built by the Mormons to Ft. Hall and then extended to Butte by the Union Pacific.

The authority given to Mr. Durant over the company engineers in the field had reached Washington and Mr. Jesse L. Williams,

Government Director had entered a strong protest, and on July 23rd, I received a dispatch from Mr. Dillon and Durant to return to the East end of the track for the purpose of meeting them, Gen. Grant, Sherman and others. In their dispatch they also assured me that the appointment of Durant would not mean any change in my lines, but the engineers were continually receiving orders from either Seymour or Durant in relation to the lines.

On July 25th, ¹⁸⁶⁸ Mr. Ames wired me that the Executive Committee in his absence gave authority to Durant for surveys West of Salt Lake, after road East is ready for grades and to confer with Durant at the end of the track. I immediately took stage and on the 25th arrived at Benton where I met General Sherman, Grant, Sheridan, Augur and others and returned to Ft. Sanders.

On Sunday July 26th, ¹⁸⁶⁸ I met Durant, Reed and Seymour. They claimed that they had to pay \$6500 for laborers waiting for the line; they considered the change of location at the head of Echo and the mouth of Weber Canon bad ones and also that the location

was not yet completed. I met them and refuted every one of their statements. Seymour and ~~Durant~~ did not ~~face me~~ in the matter at all; Mr. Jesse L. Williams informed Dillon location was good one and that he should fight for it before the Government. It was evident to Durant and Dillon that statements made by Seymour had nothing to base them upon.

General Grant and General Sherman took very strong ground with Durant and Dillon, telling them frankly that the Government would not stand for any change in my lines and that they should insist upon my remaining upon the road. I had stated frankly to General Grant and General Sherman, to Dillon and Durant, that I would not submit to such interference as had been made, that it was not for the benefit of the road, but was simply for the purpose of driving me off of the road. They knew they could not have their way while I was on the road and watched my every movement. It resulted finally in Durant's and Dillon's withdrawing all orders for change^{of locations} and General Grant and Sherman exacted an agreement from me that I would not resign but would stay with the road until it was finished.

This meeting of the largest number of distinguished officers that had met since the Civil War was a very noted event. The officers present were: General ^{U.S.} Grant, Lt. Gen. W. T. Sherman, Maj. Gen. Phillip Sheridan, Maj. Gen. W. C. Harney, Maj. Gen. John C. Gibbon, Maj. Gen. Grenville M. Dodge, Chief Enginner, U.P.R.R., Brig. Gen. F. Dent, Brig. Gen. Adam Slemmer, Brig. Gen. Joseph C. Potter, Brig. Gen. Louis C. Hunt, Brig. Gen. August Kautz, A local photographer took a picture of the groups which included T. C. Durant, V. P. U.P.R.R? Sidney Dillon, Managing Director U.P.R.R. on Construction, Mrs. Gibbon and Mrs. Potter, their children and three local officers of the Post, also U.S. Grant, Jr. son of General Grant.

I forgot all about this picutre until in 1892, when on a trip to Oregon looking over the Union Pacific interests, I visited Gen. Gibbon at Ft. Vancouver and he showed me a small copy of the picture. This I obtained from him and had it enlarged, and it has been sought for by a great many persons. It was utilized by

the Union Pacific Railway, who had an immense number of copies made for an advertisement. There is a copy of it in my book, "Now We Built the Union Pacific Railway." In later years the photograph has been sought by many libraries, museums and by many officers of the army.

✓ General Sherman, General Harney and others came to see me as they were either going to or from a peace Commission with the Sioux. Gen. Sherman wanted to know my reasons for not making an agreement with the Sioux in 1866, allowing them to come down to the North Fork of the Platte. I told him that my troops, in the expedition to Powder River in 1865, had discovered gold through the Black Hills, through the hunting grounds of the Ogallalla and Brule Sioux and that I knew as soon as I made a treaty with the Indians that Chaffee in Colorado and Fair and others in California were preparing to send men in there. I had with me in that campaign, part of a Colorado regiment and part of the California regiment, many of them expert miners and they panned every stream we crossed and had discovered this gold. They were afraid to go in there because my agreement with the Indians in 1866 was that it would be impossible for me to keep the whites out of there, and therefore I would not sign any treaty of peace which would bring them down to the North Platte. My idea was to hold them north of the Belle Fourche Fork of the Cheyenne and if they behaved themselves, I would endeavor to keep the miners from going into that country; if they came in violation of my orders, I gave the Indians permission to keep them out, and this, I know, kept the miners out of that country. The Indians were not willing to give this ground up under any circumstances as it was their best hunting ground. General Sherman and his commission, under the orders of the President made the

agreement with them to come to the north Fork of the Platte, taking in all the Black Hills north of ~~the~~ Laramie. This treaty had hardly been ratified when the Colorado and California miners poured in there and discovered the Homestead mine, which has been a great producer. The Government made no effort to keep the Indians out of this county and carry out the terms of their treaty. Sitting Bull, who was the chief of the ^{tribe of} Indians who occupied these hills, ^{demanding that they should} made protest to the Government to have their treaty carried out but the Government paid no attention to it; then Sitting Bull took the matter in his own hands, which brought on the war between the Indians and the Government in 1876 in which occurred the Custer Massacre. The Indians are ^{not} to blame for this for they were only maintaining their rights and it was the fault of the Government in agreeing to the treaty and then not living up to it. There is no escaping this fact and Custer and his regiment were sacrificed because the Government of the United States did not live up to its agreement and do its duty towards these Indians.)

On ¹⁸⁶⁸ July 27th I returned to Council Bluffs with the whole party. I telegraphed immediately to Mr. Blickensderfer to put ^{temporary} line in at the mouth of Weber, with ^{116ft} grade and send McCabe to the head of Echo to run the Lawrence line with 110 ft. grade for the purpose of testing the statements of Seymour and showing them to be absolutely false.

On ¹⁸⁶⁸ July 26th and 27th, Mr. Oliver Ames wrote me as follows:

"Your letter of 13th from Green River and ^{North Easton,} telegram of 23d from Weber received Saturday the 25th. While we were out on the road some injunctions were served on the Company for black mail purposes, and the ex-committee were called together and some very strong actions taken to head off injunctions. In order to push the road resolution was passed that the Vice President in addition to ordinary powers have the supervision of the affairs of the Company on the line of road, including such surveys preliminary or final as are being made, and all officers and employees are subject to his instructions. It being the intention to have full powers in accordance with the by-laws No. 3 and 4, he being accountable only to the Committee and Directors for his acts under this authority. I think that these full powers were given to Durant under the impression that he could do a good deal to push the road, and that it might be necessary to head off some of the suites. I think the Doctor coincides with you in regard to what should be done to locate and construct road.

The final location of the line between Green River and Salt Lake is an important event, and I hope we have got it where we shall be fully satisfied that in our hurry we have not sacrificed anything to speed. The laying of such immense stretches of line over a difficult country in so short a time is an unheard of event in engineering.

In regard to stone structure for water way, I am urging up Snyder to put on all the men possible, and hope you will see that whenever it can be done without material delay, it should be done in construction of the road. As you suggest in your letter, it may be better in many places where stone is abundant, to have the culverts and piers put in before track reaches them, and cheaper than it can be done with hauling timber a long distance.

I hope to hear from you on your way out to end of Central track, and what you learn from there. Carter has gone out to explore their country and report. I hope your interview with Dr. Durant was all harmonious. He is so pugnacious sometimes that he is difficult to please."

Your favor of July 16th is received this morning. I wrote you yesterday and directed my letter to Weber River, from which I received your telegram of 23d. I wrote you in that letter fully in regard to action of Ex-committee. As our great object is to complete the road, we must as far as possible set aside all these annoyances and let no ordinary thing turn us from this object. I am glad that our line is so well located and is ready before the graders are really ready with their tools to take hold of it. You do not say whether you have taken the long or short tunnels.

I hoped we would have stone all along on line of road fit for culvert, and we would not have to first put in trestle work; but we must not let our bridges delay us if we can do the work by piling without delay.

Duff Green got out an injunction on Credit Mobilier and we supposed it was of no account, and was put off till the 8th of August. Dillon and Durant went out on the road with that understanding. Dillon and Durant have been subpoenaed as witnesses to appear on the 21st inst, and the case was supposed to be put over till the 9th. By some hocus-pocus they got it on the 21st and Dillon and Durant away, it was represented in the Herald that they had run away to avoid testifying, and quite a damaging article was gotten up on it. James Fisk, the fellow who figured in the Rock Island and Erie R. R. Controversy, and made a good deal of money out of them and is also one of the parties whom Durant got in to subscribe to \$2,000,000 of our stock last fall, and got out injunction then for Durant in his fight against the road. He now claims that Durant and Boutwell agreed to pay him expenses and don't come up, and he will get what he can. He has served an injunction on Cisco, and will serve one on me if gets a chance to tie up the road, and do every possible thing he can to annoy us and make us pay him a liberal sum to withdraw his suit. Bushnell thinks he can buy him off with \$50,000.

I do not think it will do to go across the Arm of Salt Lake, if the water is 22 ft. deep and still rising, nor do I think it desirable to survey a route to Salt Lake unless Brigham Young and Mormons should express a strong desire to have it there. As soon as we have our line graded and track laid within 300 miles of salt Lake we can then lay over and put our men on to Humboldt Wells, and I think, with the best information I can get, grade it and lay the track before they get there. If Blickensderfer finds a line 60 ft. instead of 70 ft. won't do for us to spend any time for this, as we must hurry up this heavy work, and while we have 80 and 90 ft. grades all along the line, we can hardly afford to do much for a 60 ft. grade when our engines are made heavy for 80 ft."

You dont say anything about Seymour. I hope you found him enjoy ing himself, as that is the great object of his life, and he ought not to be disappointed. You say Hodges has reached Humboldt Wells and is surveying or working east from there. Carter went out to Salt Lake with the intention of looking over the line of Central Road and see what they have got to do, and how rapidly they can get along with their work. He will probably report to you on his return.

I hope you will be able to get along without Indian troubles, and that you will see that the water question is settled, as this is quite as important as you supposed last year, and strong parties should be at work."

On ¹⁸⁶⁸ July 27th my brother telegraphed me that Council Bluffs carried the Bridge Loan by eleven hundred and fourteen votes; twelve votes against. This was in favor of the M. & M. line.

The approximate longitude of the Ft. Sanders flagstaff is 105° 38' 24" as fixed by Mr. Blickensderfer.

On July 29th, ¹⁸⁶⁸ I arrived at Omaha and took General, Grant, Sherman and Sheridan to my residence in Council Bluffs. As General Grant had been nominated for the Presidency, and no doubt would be elected, I took great pains on this trip to post him thoroughly about everything connected with the Union Pacific Railway and especially as to the interference that there had been West of the Missouri since we commenced building it. General Sherman who had been watching this thing, also took an active part in the conversation. They were greatly interested in having the road completed and my assurances that if we were let alone that there would be no question of our completing the road within a year from the time we commenced, which would probably take us into May, seemed to greatly impress them. General Sherman said it was too big a job he thought for us to complete in the time I said but as I had met every statement I had made so far, he would give up his judgment for mine. While General Grant seemed to have full faith that we would be able to do it, he assured me that as far as he was concerned, we would have his support and on his return to Washington he should make known to the Government the conditions as he found them. I opened up with him the question that was then being started about the Central Pacific over-lapping the lines they claimed to build to Echo and we to Humboldt Wells so that he was fully posted in this matter. I showed him that the Central Pacific was trying to enforce the location of their line over a road which we had graded and which

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would have a track upon it long before they could reach Ogden.

1868
On July 30th, I received a letter from Mr. Blickensderfer stating that Dr. Durant telegraphed him for estimated quantities on the line at the head of Echo and that he sends me copy of his message to him in answer to his request. He also informed me that he had heard from sources entitled to credit that the water across the bay to Mud Island and Promontory Point was much shallower than we found it- on a line bearing more to the northward than Maxwell did. He says: "The line directly towards Promontory Point, which Maxwell took, has water from 16 to 18 feet as he says. We found it 22 ft, while on a line more to the north it nowhere exceeds 8 ft. I had this examined immediately and found that the information was not correct. We named the stations from the North Platte River as follows: Benton, Rawlins, Separation, Creston, Washakie, Red Desert, Table Rock, Bitter Creek, Black Buttes, Point of Rock, Salt Wells, Rock Springs, and Green River. The names were local to the places--which I preferred to bringing in outside names.

1868
On July 31st, Mr. Blickensderfer wired me that he found the change of line which I suggested in the Weber Valley by changing Weber channel made a five mile tangent, saved 66° curvature and 630 feet distance; threw out a long 5° curve, the only one in the valley and requires no bridge and little more rip rap than the other line.

1868
On June 27th, I received the following letter from Mr. Oakes Ames:

"I enclose you two letters left with me by you. I do not hear from the road very often since you left. I suppose you have Oliver with you now. I have not received any information as to track-laying since I was in New York before Oliver left.

I saw M. Hooper today at Utah. He says they had a great meeting in Salt Lake for Messrs. Seymour and Reed, and had speeches &c. Great men--Seymour and Reed-- they must have astonished the Saints.

We are working along here in the House slowly; the weather is very hot, and we have had night session this week. I wish I were out on the road with you. Write me when you have a chance."

1868
On August 2nd, I met Mr. Durant and Dillon and insisted upon written orders, which I obtained.

1868
On August 8th, I wrote fully to Mr. Oliver Ames as follows:

Under my orders, I am obliged to make all my official communications to the Vice President. I suppose, however, that I am allowed the privilege of writing you privately. I am in receipt of yours of July 27th. You can put such construction on the action of Durant and the Executive Committee as you deem best. I know what it means and where it will end. He has accomplished his end. Seymour has supreme control here and he in New York. If the country knew it today more than one injunction would be served on you. Nothing is being done on repairs and the orders of the Vice President is to skin and skip everything for the purpose of getting track down. Your temporary bridges will now hardly stand to get trains over them and winter will close in on you with nothing done. Your immense subsidy will be spent in dividends and what few men you have among you who have a name or reputation will be, in the eyes of the country, disgraced.

I am sent out here under orders to look after 200 miles of line. Seymour is sent here with orders to break up the finest location that was ever made by putting in 116 ft. grades and 8° curvature and I am not even under the order, allowed to say a word or give an opinion; however, the company may go on and do all this, but I doubt whether a mile of road will be accepted, with such a location, as the first principles of a first class railroad is a first class location and you may rest assured the country will know it--such things cannot be hid. I say to you that this location that they are endeavoring to change, to save a few thousand dollars, is the best location for the money to be had, and the work can all be done before the track reaches here. I made Reed admit that yesterday.

Second. They are using more material in many of the cuts than is necessary. The tunnel is only 700 feet long and the contractors told me they would take it out by hand by Sept. 1st. I know that the reason set up to save time is because they could find no vulnerable point to attack the lines--we recommend the long tunnel or short tunnel lines. If the tunnel is in the way, then a temporary track can be easily thrown around it. I further say that no one of the lines that they have now run, with heavy grades and sharp curves can be changed to and the work taken out any quicker than the line they are now at work on. I do not expect to have my views endorsed by the Company. I see that they prefer the views of Col. Seymour, or at least they adopt them. Last Spring, when I commenced my surveys, yourself, Mr. Dillon, Mr. Duff, your brother and others, said to me "hire the ablest engineers in the country." Secure the services of Mr. Blickensderfer, Jr. and put in the best location that the country affords and we will see that your lines are not molested, and that your engineers are not interfered with" stating positively that you wanted no more Black Hills operations. Now, I acted on this, I employed the ablest engineers on the continent; they have located a line far superior to any other on the continent of the same length and put in in the same time and I assure you it is a line that we can all of us defend against all comers. Ask Mr. Williams or Mr. Carter who have examined it, or send on to it the best engineer in the country and take his judgment. What is the result? Col. Seymour under order No. 7 has instructions to change, alter &c. it whenever he deems best. He knows it is a fine location and will resound to the credit of all of us who were engaged on it. No grade to exceed 65 feet going west. None, going east, to exceed 90 ft. and no curvature to exceed six degrees, and very few, if any, undulations and this in a country where it was thought 116 ft. grades would have to be often used. While this line was being located, we were abused, lied about and unmercifully attacked because we were slow, men were waiting for work, &c. all of which were unmitigated lies, and men waited here for tools not for lines and in six weeks we located 240 miles of difficult line, including such points as Green River, Rim of Basin, Head of Echo, Narrows and Weber Canon, all of which were as difficult to locate as any line in the United States; but how changed things are now! There is plenty of time to make changes, plenty of time for Col. S. to make all the surveys he wants and they move here as though they had all summer to do it in. I came here to see the lines they had run. I have seen them and if any of the high grade lines are accepted, somebody will have to answer for the swindle. Their pet line, the south line that Seymour said at Laramie

they would save \$300,000 and avoid the tunnel, with 110 ft. grades and 6° curves. They run one, it cost more than the 90 ft. grade line and increased length of tunnel. They then tried the snow side of same ravine, but here they get 110 ft. grade, 8° curves and 500 ft. tunnel and will not save \$150,000 and it will take all that or more to keep it clear of snow, as two miles of it will be blocked half the time with snow and it is two miles longer. They are now trying to get down the Reed Long Tunnel Ravine, with 116 ft. grade and 8° curve. Even here they will not save \$200,000 over Blickensderfer's line now being built and on which \$100,000 has been already spent, so that in the end you would not save \$150,000. Give me the privilege of using 116 ft. grades and 8° curves and I could give a line that will cost much less than any they have run, but I would not be guilty of turning over to the company such a line when I know that 90 ft. grades and 5° curves are practicable, and when I know that your road from Laramie City to Salt Lake can be built, if properly managed, for less than the subsidy you received.

I do not know what representations Seymour may make, but I state without fear of successful contradiction, that by changing now to any line, they will present, in the end you cannot save \$150,000.

2nd. I can build the adopted line by Dec. 1st and for \$600,000 with 90 ft. grade and 5° curves.

3rd. The quantities submitted by Blickensderfer are full including slopes. The quantities submitted in their estimate if made as Mr. Lawrence stated to me, he was ordered to make them, that is, taking the centre line, they will not give over two-thirds the quantities that will have to be moved. I have now stated to you briefly some reasons why the change should not be made.

As stated to you in my letter, and as stated in Mr. Blickensderfer's letter, which I forward to you, I consider the long tunnel line, 3600 feet long with 90 ft. grade, as the best line for future operations and would have no objection to its adoption even now. Next to that, the line now being built is the best. That line will cost about \$600,000 and \$100,000 have been spent on it. Mr. Reed stated today that if the long tunnel line was not adopted, he was in favor of finishing up the line they are to work on, except the tunnel, which we would run over temporarily, with about 1/2 miles of temporary track, but that the 700 ft. tunnel can be gotten out of way by Dec. 1st.

The change ordered at Devil's Gate has been run and the 116 ft. grade, with the additional bridge, costs more than the 90 ft. grade.

My parties are now all at work locating west of Salt Lake and I will be at Humboldt Wells with entire location by Sept. 1st. I desired to make my Oregon reconnaissance but my orders I construe as positively prohibiting it. I obtained my outfit from Government with that view, as it costs the company nothing, it seems to me to be the most favorable way of getting the knowledge of that country we desire.

I expect to remain here until my lines are located, and I trust for that short time, I will not be interfered with or further hampered. After that I shall be at liberty and the men I brought here and whom I consider I was bound in a certain degree to protect, will be through and I shall feel then at liberty take such course as circumstances may dictate."

This letter created a great many comments in Boston. The govt. Directors entered a strong protest against the Executive Committee caused Mr. Durant who was representing the Company as Vice Pres. and evidently had behind him the Executive Committee, and Mr. Dillon, who was still chairman of the Committee who had charge of the construction, to desist from any further attempt to change my lines. In their talk with me, they seemed to be anxious to have harmonious relations between the construction department and the Co. and for me to push the work to Humboldt Wells. I had already covered that country with my engineers before receiving any orders in relation to it, and Mr. Durant at my suggestion wired to Mr. Ben. Holliday who was very

anxious about the Oregon line:

"I have everything ready to grade one hundred miles this Fall on line north to Snake River, then to Columbia. Am only delaying the work on account of your suggestion. We can send a party to survey from Paradise Valley to the head of Middle Fork of Willamette River, in case we have controlling interest in the entire line through, and in existing contract, should we decide to take that route. I regret you did not come here."

On August 3rd ¹⁸⁶⁸ I received a dispatch from Mr. Hodges that he had furnished Mr. Blickensderfer with full notes, maps, profiles and reports from Promontory Point to Humboldt Wells; that the line followed the California line all the way, lines being in many places identical.

On August 3rd ¹⁸⁶⁸ I started for Salt Lake, Mrs. Dodge, Dillon with me. We left Omaha in the Director's car with Dr. White, Genl Blair, Col. Gault of St. Louis and others. White and Blair were on the Government commission for examining the ^{completed} road.

On August 4th ¹⁸⁶⁸ I met Mr. Williams who had been out to the head of Echo and Weber and he informed all the parties that the location at Echo and Weber was right and that he should oppose any changes; that the heavy grade proposed at Echo is far more objectionable than in a lower altitude and that the 90 foot grade which we had adopted was the best on account of snow and ice and to add to it twenty ^{per mile of grade} feet to save work, would be a great detriment to the line and the operation of the road, and the contractor informed him they could take out all the work before the track could reach them.

On August 5th, ¹⁸⁶⁸ I received a dispatch from T. J. Carter from Sacramento that C.P. track was laid 240 miles and would probably complete 200 miles more the coming year.

On August 6th ¹⁸⁶⁸ we arrived at Green River. I instructed ^{Gen.} Williamson to do the best he could with the Green River people, to move the houses so as to clear our depot grounds. I rode all night in the stage and arrived at Bridger in the morning.

On August 6th, ¹⁸⁶⁸ Schuyler Colfax wrote me as follows: Benton.

"I received your letter at Omaha, and was sorry that I did not ^{see} you personally and have you go out with us. We had need of just such a conductor; luckily Gen. Buford was with us and telegraphed ahead for meals and except at one place where the telegraph failed, we did quite well. We found the prices quite reasonable \$1.00 apiece, except here where I learned that the Railroad company had paid it.

I tried to find Mr. Snyder at Omaha but he was not with the reception committee, not at the depot when we started. As we were there fifteen or twenty minutes I looked around for him but he was very busy they said, and not there. Mr. Frost met us at the landing and accompanied us around town, but his business prevented his going out with us. Mr. Snyder wrote me at South Bend in reply to my letter and said he would make the arrangements for a stage for us from Cheyenne to Denver and return, and not seeing him at Omaha, I asked Mr. Frost to arrange it. Luckily, I got out of the crowd at Cheyenne and went to Wells, Fargo and found there they had heard nothing of our wanting a stage, but Mr. Cottrell promised to have it fixed.

Dont regard this as a fault-finding letter for it is not. I only thought I would give you a faithful report. Pullman furnished us the car which was attached to the train at Omaha and we have had a fine time.

I know how busy you officers are and we only regretted that we had not been with the Editorial Excursion where the arrangement were better systemantized.

All looks well politically."

This letter only shows what every official who travelled over the road expected of us and how impossible it was for us to comply with the request of all.

On August 6th, ¹⁸⁶⁸ I received the following telegram from Mr.

Jesse L. Williams; Government Director:

Omaha.

"The undersigned, one of the Government directors and members of locating committee, respectfully but earnestly remonstrate against any change of final location on Wahsatch range, as made by J. Blickensderfer, locating Engineer, and approved by Chief Engineer, which shall increase grades over 90 ft. per mile. Having examined the ground I know this maximum to be feasible, at reasonable cost, and that it need not delay your rapid tracklaying. Ninety foot maximum grade being adapted to the general slope of the Wahsatch and being the ruling grade from the Missouri River to the Sierra Nevada; to exceed it here would materially impair the efficiency of this Continental Road, injure both ~~itst~~ stockholders and the commercial interests, and increase the hazard of travel over the Snowy Range with only a paltry advantage to the Contracting Company. If there exists a purpose for increasing this grade, I trust it will be abandoned."

On August 9th ¹⁸⁶⁸ I arrived at the head of Echo; in evening met Seymour, Lawrence and Blickensderfer. Found my camp six miles above Weber at 9 P. M.

On August the 8th, ¹⁸⁶⁸ I returned to the head of Echo and found that three lines had been run down South Ravine; too impracticable and ~~are using~~ 110 ft. grade, 8° curve and 400 ft. tunnel; cost about \$150,000 less than Blickensderfer line, ^{and was} two miles longer. Mr. Reed also stated he could get out all the work on line ^{90 ft. Blickensderfer} before track got there, except tunnel, which could be taken out by December 1st a 3000 ft. Mr. Reed run long tunnel line 3000 ft. 90 ft. grade, 4° curve. Makes it cost about \$700,000 and considers it best. The other line no ad-

vantage over the adopted line. Rock in tunnel, sand stone easy to work and will stand."

The trouble with the 3000 ft. tunnel with the 90 ft grade was that it was impossible for us to get any line accepted west of it until that was finished, which I knew would carry us into the next year, but even after it was built, it was not any better line than the Blickensderfer 90 ft. line. The only advantage we could have in a tunnel line would be to get a grade of about 60 ft. which could be accomplished with a much longer tunnel. I wrote Mr. Ames and Mr. Dillon. After examining all the lines, the McCabe 116 ft. line, included, Mr. Reed and myself agreed that it was doubtful whether anything was to be gained in the change as over \$100,000 worth of work had been done on the adopted line. After all the criticisms, changes and lines run, the final decision was that the line run by Blicksnderfer and adopted by me was superior to them all, and I wrote Mr. T. C. Durant as follows:

Head of Echō

"You will gain nothing in time or final cost in changing line here. The line being built will cost \$600,000; \$100,000 has already been spent on it. There is no difficulty in completing it before track gets here. Tunnel is seven hundred feet long, approaches are Sand rock and easy to work, and will stand, if it should not get out in time, temporary track around it only one and half mile long. Your true policy is to order this work pushed.

Two thousand men can work on it and complete it in sixty days.

One hundred and sixteen foot grade line costs more than ninety foot, at Weber Canon. Estimate sent by mail.

C.P.R.R. have two hundred and forty miles of track laid and expect to complete this year two hundred more, which will take them to within fifty miles of Humboldt Wells. I go to Salt Lake today."

On August 10th, ¹⁸⁶⁸ I camped at the mouth of Lost Creek. Examined one line down Weber to narrows; grade looks low, on low bottom, other wise line all right.

On August 12th, ¹⁸⁶⁸ I appealed to General Augur to instruct the commanding officer at Green River to protect our property, our rights and reservation of the town at that place from depredation, squatters, &c. I also requested on behalf of the Union Pacific Railway that until civil law is firmly established at that place, that the commanding officer assume full control so as to preserve the peace and give security of life and property. A bad lot had settled at Green River and this was the only way to handle them.

Chap IV
Story

On August 11th, ¹⁸⁶⁸ I moved to the Bellmont stage station and examined the line through the Weber Narrows very carefully; also around the Point going to Ogden. The table is 30 ft. higher than Devil's Gate. Met Morris and advised him to run on sand bar in river. Rip rap of boulders and brush will protect bank until cars can run, and take rip rap from the canon.

11
Wednesday Aug 12th ¹⁸⁶⁸ I arrived at Salt Lake City and stopped at the Townsend House. Found letters from Mr. Ames and others. Went up to the fort at night to a dress parade.

On August 13th, ¹⁸⁶⁸ I received a letter from Mr. N. P. Dodge stating that through trains were running over the St. Joseph railroad. the grading in the North-west and valley about half completed.

On August 13th, ¹⁸⁶⁸ Mr. Ames telegraphed me from New York that Seymour and Reed telegraphed "Your line costs about \$600,000 more than Reeds, besides cost of temporary track."

I answered this as follows:

New York.

"I have not seen their profiles or estimates or had access to them, but I spent three days on the ground examining the lines. The adopted line, Blickensderfer estimated as costing \$715,000 for grading, bridging, &c. 90 ft. grades, 5° curves. He estimated two thirds of his work at fifty cents per yard; its cost will be less than his estimate. Reed's long tunnel line will cost much more. The 116 ft. grade and 8° curves line will cost considerable less but difference will not be half the sum you mention. On adopted line \$100,000 have been spent, and entire line can be completed by Dec. 1st, if properly worked. Track around tunnel, can be laid if required, is cheap and only ^{one and} one-half mile long. If you build the 116 ft. grade line you will always regret it."

This was virtually a repetition of statements which had been made before and which had been answered.

On Aug 14th ¹⁸⁶⁸ I answered Mr. Ames relative to the cost of lines, giving the estimates of Mr. Blickensderfer in relation to them and also had Mr. Reed wire him giving his views of the matter, that it was best to build the line which had been adopted; that the difference of cost was made mostly in the difference of grades and it was absolutely no truth in the assertion that the line Blickensderfer had adopted would save any sum over the other lines when they took into consideration the cost of tunnels.

On Aug. 14th ¹⁸⁶⁸ I wired Mr. Ames as follows: Salt Lake.

"Mr. Reed handed me his estimates today and they do not make difference in cost in favor of any of their lines \$200,000. Mr. Reed estimates work done up to today on adopted line at \$100,000, leaving balance in favor of any line only \$100,000. Will see today cost of Blickensderfer's line estimated at same prices and in same way, as their estimates which will still reduce it. Reed telegraphed corrected estimates yesterday on adopted line, decreasing its cost \$120,000. You will gain nothing in final cost, or in time, by change, 116 ft. grade line, 8° curves, is equal to 126 ft. grade per mile."

On Aug. 14th ¹⁸⁶⁸ I met Mr. Clemens, one of the principle engineers

of the Central Pacific Railroad. He informed ~~me~~ that he should not build any lines south of the Lake. This was the first information I had had as to what the Central Pacific should finally conclude. The question that was disturbing the Mormons was my decision to build north of the Lake. When I made this decision, I immediately notified Brigham Young. He was greatly disappointed and much dissatisfied at it and appealed to our directors. They could not change it because they knew the Government would not sustain us in making that great detour and adding distance to the main line. Any road coming in from the south of the Lake would naturally build to Humboldt Wells around the south end of the Lake. The Union Pacific's decision was that when they built to the north end of the Lake, they would build a branch to

Salt Lake. Brigham Young immediately got into communication ^{throwing all his influence to that road while around the south side of lake} ~~heretofore it had been with us, and it was a great loss to us.~~ with the Central Pacific people and tried to get them to come ^{He sent his people to take contracts with Central Pacific} into Salt Lake, but I knew from my own surveys that the

Central Pacific could not afford to build to the south of the Lake and this decision of Mr. Clemens was what I expected.

On August 16th, ¹⁸⁶⁸ Brigham Young let it be known that he was going to preach ~~on~~ ^{Sun} afternnon at the tabernacle and of course we all attended the meeting to hear the sermon. I was present with Mr. Reed, Seymour, my family and Mrs. Sapp who was with us from Council Bluffs. His part of the talk was devoted entirely to railroads and especially to the location of the line north of the Lake. He criticized the engineers very severely stating that while they could lay the lines and build it, still the people through the country which they went must be depended upon for the business and safety of the railroad, virtually assuming that if a line was built north of the lake, it would not be safe. He had a good command of the English language, although he did not use very pure English and his manners were very aggressive and I could see that it was for the benefit of his people, especially as he

had always told them, up to this time, that the railroad would go through Salt Lake City and on the south end of the lake. It was even reported that he had had a revelation on the matter and this sermon of his was letting himself, and his people, down easily and charging it up to the engineers. At any rate he alarmed my people very much and they were very anxious for me to get out of Salt Lake, but it did not alarm me any. I was satisfied that as soon as he heard the decision of the Central Pacific people, his views would change.

It was always my custom when ^{leaving} Salt Lake to call on President Young at his office and he would have his apostles there to meet me as I bade them adieu. I hesitated, after his severe denunciation of me before his people, about going up to bid him good-bye as usual, but concluded I would do so and notified him when I would be at the office. When I arrived, he greeted me as cordially as ever; the apostles were with him and all seemed to exert themselves to be attentive to me, so I left knowing that my conclusions on his sermon were correct. My oldest daughter Lettie was with her mother and he took her up to the Lion house for a visit with his children and his attention to ^{her} alone was noted and much greater than to any of our people who met him.

On August 17th, ¹⁸⁶⁸ I sent Mr. Ames the following letter from Salt Lake City:

"As requested, I send you statement of cost of different lines at head of Echo.

1st. Blickensderfer's lines, 90 ft. grade line in main ravine. From station 0 to 390 - 10. Length 39,910 ft. 671° curvature. Total cost, estimating all rock solid, \$1,009,142. Length of tunnel, 2600 ft.

90 ft. grade line - Hodges Ravine - Stations 0 to 394 - 10. Length 39,410 ft. $806 \frac{1}{2}^{\circ}$ curvature, 400 ft. longer than main ravine line. Length of tunnel, 840 ft. total cost \$715,887.50. South Ravine Stage road line, 90 ft. grade, length 54,663 ft. by 15,623 ft. longer than main ravine line, $1165 \frac{3}{4}^{\circ}$ ft. maximum curvature 5° . Total cost, \$668,639.60.

The above lines are estimated with all rock solid with three-fourths of all banks at 50 cts. per yard. If estimated one third earth Ex. $\frac{1}{3}$ loose rock and $\frac{1}{3}$ solid rock, it will reduce cost of 2600 foot tunnel line \$125,000, the Hodges Ravine line \$7500, and the South line very little if any.

Hodges Ravine line - adopted line, now being built, 39,410 ft. long, $806 \frac{1}{2}^{\circ}$ curvature, Max. grade, 90 ft. Max. curves 5° grades equated to tangent, length of tunnel, 700 ft. total cost \$662,000.

This line is estimated all rock Ex. solid rock, all banks above 12 ft. high at 50 cts. per yard, and has over 3000 yards of masonry in culverts. To reduce masonry to Reed and Seymour's lines would take off 2000 yards. On this line over \$100,000 of work has been done.

Reed and Seymour's lines as estimated by them. Main Reed Ravine line, 90 ft. grade, 40 Max. curve, same ravine that Blickensderfer 90 ft. grade line is on. Length . . . Curvature, length of tunnel, 3500 ft. total cost \$4,924,601.

Maine Reed Ravine, 116 ft. grades, Max. Curvature 8° No equation for grades, Length. Total cost \$495,549.

South or Seymour's Stage road Ravine line. Length 50,258.5 ft. Curvature 882° 110 ft. Max. Grade 8° 15' maximum curve. Grade equated, 105 stations longer than adopted line. Length of tunnel 380 ft. total cost, \$504,982.

In their estimates, no estimate is made for superstructure. All excavation is estimated at $1/3$ gravel, $1/3$ loose rock and one-third solid rock, which reduces cost materially as compared with way Mr. B. estimated his line. Loose rock costs \$1.75 per yard; solid rock \$3.00 per yard. You therefore see that counting the work done, and accepting their estimates, as they return them to me, you cannot save \$50,000 by any change. You equate grades on the curves, on 116 ft. grade line, same as equated on adopted line, it would add \$50,000 at least, to its cost.

The alignment length and curvature of 116 ft. grade lines and 3600 ft. tunnel line, I have not gotten, but it does not vary 500 ft. from length of adopted line. Estimate all lines on same basis and the high grade lines will not save \$100,000 on first cost, on the 2600 ft. tunnel line, 90 ft. grade will cost less than 3600 ft. tunnel line in same ravine."

When Brigham Young learned the Central Pacific people had decided to go north of the lake, he was greatly disappointed and he immediately changed his policy and came back to us turning all his forces to help us out, as now the great ^{congle} contract had begun between the two Companies - the Central Pacific to reach Ogden and the Union Pacific to reach Humboldt Wells, and both routes were virtually ^{or} working parallel to each other from Ogden to Humboldt Wells, some two hundred miles.

On August 17th, I met Mr. Montague, the chief engineer of the Central Pacific, who had come to Salt Lake for the purpose of making a final decision himself as to the lines. Mr. Montague informed me that the grades on the Central Pacific from the summit ^{to the Sierra Madre mountains} 15 miles west was 85 feet, then for 25 miles 116 feet to the mile and from there to Sacramento 25 feet. On the West slope the thermometer never got ~~more~~ ^{than} six below zero, while in the Valley on the Eastern slope, it fell some time to 15 below. Men could work bare-handed in the heavy snow. The distance from the summit west doubles for 19 miles over 116 foot grades, and their 46 ton engines would draw 12 loaded cars; over 90 foot grades from five to seven ^{cars} more. Their snow sheds work well and were made of round timber. I learned from dispatches from Council Bluffs that the engineers of the Council Bluffs and Chillicothe railroad were in town and the prospect was good for an early completion of the railroad; that the citizens of St. Louis had subscribed one million dollars towards it. The near completion of the Union Pacific was drawing all roads to Council Bluffs; also that the contract for the completion of the B. & M. was let to Wolf and Carpenter to be finished by the first of November; that was on the line south to St. Joe.

I also received a letter from Col. E. W. Rice in Washington in which he said that Gen. Rosecrans was anxious to make arrangements with the Union Pacific in relation to a line through Southern California; that he controlled the road chartered by California from San Diego to Fort Yuma and wants to join with us. I wired him to write Gen. Rosecrans to communicate with Mr. Oakes Ames.

On August 18th, ¹⁸⁶⁸ Brigham Young, Bishop West and John Q. Canon took me out in a carriage to see the country east of Salt Lake. I dined with Brigham Young and Amelia Folsom that evening.

On ^{Aug} 19th ¹⁸⁶⁸ I started north on my trip to go over the line to Humboldt Wells. I received notice from the Secretary of the Interior that the Commissioners for the examination of the road had examined the 25th section of 20 miles commencing at the seven hundred and terminating at the 720 miles post west from the initial point and had accepted it.

On Aug. 20th¹⁸⁶⁸ I camped at Ogden and dined at Bishop home with Brigham Young and his sixteen wives, quite an interesting dinner.

Mr. Ames wrote me the following letter in answer to letters which I had written him from Salt Lake:

North Easton.

" Your letter of 4th inst. is received. We had known by telegraph that the Mormons had taken a contract west of Salt Lake, and that the Central Road was doing everything possible to secure the line to Salt Lake Reed, I understand, has sent a heavy force of men west of Salt Lake and I have no doubt but we shall be able to lay the track from one to two hundred miles west of the lake. It is clearly our right to lay the rails till the two roads meet, and their giving out contract to grade beyond their ability to lay their rails should not stop us nor the road from completion.

Carter went over their road and I understand wrote you fully on it. He says they have not the iron to lay, and if they had it their rolling stock is entirely insufficient to supply them with material to lay the track more than two miles per day under most favorable circumstances. Looking at the matter in the most favorable view for the Central Road, I see no real chance for them to prevent our occupation and construction of the line 150 to 200 miles west of Salt Lake, unless the severity of the winter in Wasatch range shall prevent the delivery of our material while at the same time it will favor them. We, however, know that last winter their line was closed by snows much more than ours. You will know better than we do here the real prospect of completion of our grading to Salt Lake this fall; but our information is that by the first of December we shall be entirely completed to Salt Lake excepting the tunnelling which can have the track laid round, and with a favorable winter the track will be laid to the Lake.

I hope you will be able to get a good line West, and if our graders have gone to Humboldt Wells that arrangements may be made for the two roads to work in harmony on the grading, and as soon as that is finished the track can be laid and the party that gets the most down or rather lays the track will have the road. There seems to be no other way unless we permit the road to be stopped."

On Aug. 20th¹⁸⁶⁸, I rode to Malad and found Maxwell's camp and gave him instructions about location.

On August 13th¹⁸⁶⁸, when I arrived at Salt Lake, I had sent Messrs. Hudson and Egan West into the Raft River mountains to examine timber and see what prospects there were for getting out bridge timber and ties.

✓ On Aug. 20th¹⁸⁶⁸ my brother wrote me that the Rock Island railroad people had been fixing up their depot grounds and expected to erect a depot on the grounds very soon and run East from Council Bluffs this Fall. That the citizens had secured forty acres for them for Depot grounds inside of the Riddle track grounds. Mr. Joy of the C. B. & Q. had been at the Bluffs and was negotiating for the Phelps road which was being run from St. Joe to Council Bluffs with a view of connecting the C. B. & Q. with it at Pacific Junction.

On ¹⁸⁶⁸ Aug. 22nd, I examined the Promontory Point line. We have a 90 foot grade over Promontory. Mr. Stevenson, the engineer of the Central Pacific had a very bad line on the south slope and was then running a 90 ft. line on our slope.

On August 23rd, ¹⁸⁶⁸ I received the following letter from Mr. Oliver Ames, showing the reasons for passing a resolution which I had objected to:

North Easton.

Your favor of August 9th from head of Echo Canon, is received. I sent you a copy of the resolution introduced by Mr. Duff and Passed in Executive Committee, giving to Durant, Vice President, in addition to ordinary power, the supervision of affairs of company on line of road, including such surveys preliminary or final as are being made on the road, and all officers and employees are subject to his instructions. It being the intention to delegate to him full power in accordance with By Laws 3 and 4. He being accountable only to this Committee and Directors for his acts under this authority. The By Law which justifies the above action is No. 3, where in a clause in section 4 it says: "The Board may at their discretion assign to the Vice President by resolution a portion of the powers and duties of the President." I think under the stimulation of the first section the Executive Committee got together and passed a series of resolutions, designed to head off Fisk, and the Doctor used them to increase his power. It is one of the miseries of our road that we have a man in it who is so desirous of power and so jealous of every act that does not coincide with his notions.

We have recently had a number of telegrams from Reed and Seymour (For Seymour always joins Reed with his) making some very strong statements as to the difference in cost between your line and theirs. making the difference equal the whole cost of your 800 ft. tunnel line and states that Blickensderfer's estimate was made on a different and less expensive line and if figured up as they figure theirs your adopted line would cost over a \$1,000,000, while their long line would cost about \$400,000. I telegraphed you on this statement and have your correction of their telegrams, all of which seem so clearly to fix the construction of your location that I think there is not the least doubt of any change from the line now being worked.

Durant and Dillon are away on account of the Fisk suit. It is now fixed so they can return. I have called a meeting of the Board of Directors for the 2nd of September (next week) and we will have the final acceptance of located lines fixed with the Committee on location, which is Ames, Dillon, Durant, Duff and Williams, and we will have the line where the best interests of the road require. Though the line of the road will be fixed all along the route where your engineers have laid it, it is exceedingly annoying to have to fight for it all the way and for the purpose of satisfying Dr. Durant that he is a power and to be consulted on all matters. My opinion is the Dr. wants the best line just as much as any of us, and when talking about taking the long line it was with the idea of its being cheaper to get the line through at once and work out the long tunnel after the road was running, and the estimate that he had from Reed and Seymour showed that both these lines could be built about as cheap as your line, allowing that when the road was completed, we could work out the tunnel by machinery at about \$10 per yard. Your telegrams of cost have fixed this so that there can be but one opinion as to line to be built.

In regard to replacing all wooden structures with stone on the line of road just as rapidly as required, Snyder writes me it is being done; that he has a large force on and is pressing them whenever needed and it can be done. We are ordering some 20 more additional locomotives to get our construction material ahead, and are doing everything possible to get our road on to Salt Lake this year, and 200 miles west of there next year if possible. I had

a letter from Carter who has been through, and he thinks we may go from 100 to 200 miles beyond Salt Lake. He says they are short of material and of rolling stock to deliver their material for laying 2 miles per day which he thinks they are trying to accomplish.

I also received your letter dated Salt Lake Aug. 14th enclosing letter of Genl. Sherman at the same time yesterday that I got your letter of Aug. 9th at Echo. You will proceed I hope to survey the line west of Salt Lake and get as good a location as possible this year. I understand you have 60 miles located and some heavy grades and work. We are now within 300 miles of Salt Lake, and we have the right to work 300 miles ahead of our track, we can now put our men on the heavy work west of Salt Lake at once."

As everything in relation to the above matter had already been settled, I give it here simply to show the fight that was going on in the New York office.

On ¹⁸⁶⁸Aug 23th, I rode over the country to the north of our line endeavoring to obtain ^{over Promontory} the slope with lighter work and grades, but the country rises too fast to obtain any grade less than 90 feet and any work lighter than on the present line. Hodges says that Ives of the Central Pacific made 1300 ft. fall from the Don Don Pass East.

On ¹⁸⁶⁸Aug 24th I went out to examine the Hodges line and ordered some changes. Rode to Hodges' camp and back to Col. Hudnutts, who had arrived at west side of Promontory Point. One mile of his work was very heavy and will cost \$150,000.

On ¹⁸⁶⁸Aug 25th, Mr. Snyder wrote me that he had returned from a two weeks trip over the road. Found matters in good shape; that he was cleaning out the thieves as fast as he could reach them and that Mr. Evans had the Construction Department in better shape than ever before. Business was good; trains moving; was sending more iron West than is being laid.

On ¹⁸⁶⁸Aug 25th I spent the day with Col. Hudnutt and his party, putting in a line around the heavy point to avoid that one mile of heavy work, which we succeeded in doing.

I spent the 26th on Promontory Point, refitting the line and looking at the country generally.

On ¹⁸⁶⁸Aug 26th, Mr. Snyder wrote me as follows in relation to the complaints of Schuyler Colfax:

Omaha.

"We gave Colfax and party our officers car, sent him to end of track and return to Cheyenne, and told him that on his return from Cheyenne we would send special car for him. He was well treated at all points and train delayed here for him so that he could come up town and make a speech. I didnt see him, but Hoxie and Frost did and started him off allright. I supposed all was satisfactory until I heard indirectly from the west that he thought we ought to have sent a representative of the road and the cooking car with him. The N. Y. office gave me no intimation of his coming or instructions of any kind, and I violated special orders in sending C. and party with special train from Benton to end of track and return.

The excursions this season have interefered with our work very much and have worn me out. I saw that ~~he~~ had special attention because he was candidate for V.P. and because he dont agree with me in politics. I let Frank Blair ride behind a freight train because I happened to belong to his party. I know that you wont believe that I let politics interfere at all with business."

On ¹⁸⁶⁸ Aug. 27th I was still working on Promontory Point. Maxwell and Morris arrived; gave them their instructions and pushed them West to Red Dome and beyond. Ordered Hodges to close his line on Red Dome Pass.

On ¹⁸⁶⁸ Aug 27th I wrote to Mr. Durant on the lines over Promontory as follows:

"I enclose comparative estimates of 90 and 116 ft. grade lines at mouth of Weber. I telegraphed from statement of engineer that 116 ft. cost most, but by estimate when considered with line going north, it will cost about the same. In going north of Lake 90 ft. grade line avoids two crossings of Weber River and will save 2/3 to 3/4 mile in distance, and difference in cost is not sufficient to justify even the building of two bridges.

I examined the slide question very carefully and there is no danger from it, but what can be easily overcome, and no more material will come down than we can use. We will want a large amount of rip rap about two miles west of the curve, and the same rock on this side hill, is just what we want and I consider it an advantage rather than a detriment, and when road is finished, you will find that it will go away very fast by the repairing demands of the road.

The delay here in decision at head of Echo is ^{small} damaging to us. For two weeks the contractors have only used force on the work not ~~increasing~~ it as they might have done.

I have no question but what we have adopted the cheapest lines in a commerical point of view, to be had in that country."

I also wrote to Mr. Reed in regard to the line to Humboldt Wells, as follows:

"I send you by W.F. & Co. Ex. map and profile from East base of Promontory to near Red Dome Pass, 100 miles west of Weber.

I also enclose notes of water on line all the way through to Humboldt Wells, also alignment and Bench notes.

I do not believe I will have another opportunity to send in profile before I arrive at Humboldt Wells; therefore if you desire to put men to work west of point you have notes of, I will deliver notes of line to Division engineers on the ground, and send you maps and profiles as soon as I arrive at Humboldt Wells.

The work west of Promontory summit is light, probably some rough work in Red Dome ~~pass~~, but very little rock work mostly gravel or sand. This is about last of rock work on the line. They may be a little near Pequop Pass but not much. After raising to the summit of the Toano Mts. say 185 miles west of Weber, there are several heavy cuts and fills, crossing the drainage to Cedar Pass which is 218 miles west of Weber Canon. This work is gravel, and its a good country.

From Cedar Pass to Humboldt Wells, 232 miles from Weber Canon, work is light Your heavy work is on East base of Promontory, for f four miles, cuts are lime rock, but nearly all of the excavation will go into banks. I estimated 68,000 yds of rock and 63000 of earth in cuts on six miles; this is from foot of grade to summit.

So far as I have reports from persons examining country for timber, they find one grove at head of Blue Spring Creek, about 16 miles above stage station on Malade slope of Mts. and 25 miles from line. Good road to ~~timber~~, 2nd. On Clear Creek, south of Stage Sta., this timber will be brought out by way of Clear Cr. Stage Sta. there to Pilot Spring. Then south to line near East of Red Dome, on north point of Lake.

3rd. Several small groves on heads of Raft River, about 20 to 40 miles due north of line, but I think it is impracticable to get this over the mountains, and the haul around will be very long. West of this I have not yet received reliable reports but expect them daily.

There are several groves oc cedar on Promontory Point that will afford plenty of wood and good many ties can be gotten out of them.

Your projected line from Goshoot or Don Don Pass towards Humboldt Wells will not work. The Pequop Mts. join the antelope Buttes making a solid wall against us, and we cannot get over it, t the only way for us to do is to keep due north and intersect north line or get into Clover Valley due west of the Pass. The Pass falls 1300 ft. in 8 miles with very heavy work.

You can send teams forward as fast as you like. Line will be ready for them and your engineers can get notes on their arrival."

On ¹⁸⁶⁸ Aug. 28th I received a report from Mr. Edward P. North who was making additional soundings in the north end of Salt Lake; he said he could not find a sounding of over 12 ft. of water but on

line starting about two and a half miles north of Hodges initial point on survey around Promontory Point, he found fourteen feet of water. Both lines ended at the north side of Mud Island. This line would only be of use to us in shortening the line from Ogden to Promontory Point and of no use in crossing the lake.

Mr. Ricksecker sent in a paper giving notice of the letting of the work by Governor Stanford.

On ~~Aug~~¹⁸⁶⁸ 28th and 29th was still at work on Promontory. Col. Hudnutt got a line around to the bottom lands. The Rock Springs was in latitude $41^{\circ} 20'$, the variation of the needle $17^{\circ} 38'$.

On her return East, Mrs. Dodge wrote me on the 30th as follows:

Council Bluffs, Io.

"The trip home was quite tiresome and terribly dusty as you know. As we came past Rowllins Springs Station, the construction cars passed going to Benton-~~with~~ the Seymours on board, and when we went in to the U.S. restaurant for breakfast they were there and came in with us. At Benton when I took my sleeping section I drew the curtains down and laid down; pretty soon I heard Seymour and J. D. Casement in conversation, Seymour scolding and C. swearing. The principal subject was the water tanks and the management of water west of Cheyenne giving Evans fits. Seymour asked Casement if he would take charge-which was accepted and S. said he would see the Doctor, &c. You can well imagine it was rich. Seymour hinted that his object in going East was to get the Doctor out here in September and I thought from what he said that the Doctor needed some representations to come out. I fancy there will be lively times this fall."

The St. Joseph road which was finished ^{to Council Bluffs} had a very heavy traffic.

On ~~Aug~~¹⁸⁶⁸ 30th I was still at Promontory. Col. Hudnutt came over with Bent and Collins to dine with me. I gave Col. Hudnutt instructions, maps and profiles of Toans Pass. I made estimate on the East slope of Promontory Point and sent it to New York. Rock excavation, 68528 cubic yards; earth excavation 63,613 cubic yards; the south embankment 550,000 cubic yards.

On ~~Aug~~¹⁸⁶⁸ 31st closed up the line over Promontory and made the map and profiles. Wrote Reed giving him notes of grades on line, &c. also profile, maps and notes on timber on Red Dome Pass.

On August 31st ¹⁸⁶⁸ Mr. Jesse L. Williams, the Government Director wrote me as follows:

New York
"Have yours of 16th; as of 13th; also one from Mr. Blickensderfer with grades, etc.

When you get location across Salt Lake Valley and Promontory Point if you will get Mr. B. to send me some grade table for 1 or 2 hundred miles more I will add it to profile or as far as our Company will probably build. If you know the level of Salt Lake (the water) please give it. I adopt Dey's original datum line as about as near as we will get to it; that is low water of October 1863, lowest ever found, 965 ft. above sea. I had supposed that his zero was the grade line, but finding that it was the very lowest water, it differs but a few feet from Mr. Talcott's levels on N.W. and about as much from Johnson on the R.I. Have not heard from Theilson.

It seems that the Secretary of Interior some weeks ago submitted to the President, and through him to the Atty. General, the question what control the President has over the subsidies after Commissioners have reported favorably; also whether the Government can withhold a part of the bonds to make good the temporary work and equipment. See Everts reports that for the present better issue the bonds as heretofore, that there is time enough and he will examine more carefully. I presume he will report that there is no power in the President. The law is full in behalf of the company. I think the only power is in the appointment of Commissioners and he will make no change.

I think all will go on as heretofore, the danger may be in effecting unfavorably the sale of first mortgage bonds by the talk. Little has been said, however. A week ago Mr. Ames telegraphed me to see Mr. Browning which I did. I came from there here. None of our friends here until tomorrow so I know nothing Board meets on 2d September. Cisco says I'm entirely right in urging a reserve fund of 2 or 3 millions, that he told Oliver Ames so, and that he and Macey will vote for it, but I presume it will not carry.

I am entirely ignorant what line or what grade is adopted at head of Echo or at Devil's Gate; perhaps I may find out at meeting of Board. Grant is here, but he has said nothing. From your last letter, I concluded that the Blickensderfer line was the proper one about \$150,000 more costly in grading with a 90 ft. instead of 116. This high grade 116 should by no means be adopted any way for so small a saving as that. How much do you suppose the B. & O. R. R. would expend to reduce their 116 ft. to 90 ft. Probably a million or two of how much did the Pa. Central expend at Altoona to get down as low as 96? at 116 they could have reduced their tunnel half or two thirds.

Both my son and myself have pleasant recollections of our delightful horseback mountain trip, and of the kindness and respect of all the party including Capt. Wells and his Lieutenants, to whom with others give my kind regards. But especially to yourself we are under great obligations.

This Pacific Road responsibility and constant thought and work this hot weather is to me as it is to you very wearing, and I ought to be out of it. I may have done some good in sustaining the engineers in getting a good location, instead of the hop, step and jump plan of Durant up to 116 ft. at every point, but beyond this I am probably doing as much harm as good; but how and when to get out is the question. I can't sneak out. I may know more in a week or two. Mr. Browning seems to feel all right and to appreciate my services and yours; but then he will never grow grey under his part of the load. He is off now to the White Sulphurs.

I had better be in Indiana helping to organize for November election. Depew's letter which I will enclose in next mail is a little rose colored; though if our people everywhere get thoroughly scared it will go right.

Wrote you yesterday. The part of that letter about issue of bonds by President, Evert's opinion &c. is, of course, confidential.

I doubt if Atty. Genl. can find any power in the law in the least to withhold part of the bonds. His only control is in appointing the Commissioners, and as to that, of course, I have not a word to say. I have done nothing and will do nothing that might tend to check progress of road, but at the same time must report road just as it is. I find much to commend in the road-so far as it is built or located; but must say two to three millions more of subsidy should go into road, and that much less into profits.

Col. Seymour arrived this morning. Only saw him a moment. I asked what line was adopted at head of Echo, Devil's Gate. He says no change was made. The long agony is now over as to location. Judging from your letter of 16th ult. giving comparative statement of cost, length, &c., I doubt not the right location has been made."

This was raising a very important question that was to come up later on and would be very troublesome to the Union Pacific.

204 As under a final decision of ^{Sec} Everts, the Central Pacific was able to draw bonds over a line we had already constructed and would have drawn them all, but that I was able to stop them through General Grant when he became President.

On September 1st, ¹⁸⁶⁸ I marched and camped at the Seaton Springs; they lay on the edge of the Mud Flats, a very singular formation, deep and circular; water looks pure but is mostly brackish. The mud flats appear soft but have a hard stratum under them-sometimes almost as solid as rock. The line may have to be ballasted with gravel to keep ~~track~~ from getting wet and muddy.

On ~~Sept~~ ¹⁸⁶⁸ 2nd I marched and camped at Willow Springs. Passed Monument Point. The Central Pacific Road closed their locations farther west on Wednesday, one week ago. Learn that their track is one hundred miles West of this. They ordered all their engineers on location and construction west of Monument Point. Our line runs south of locomotive Springs, a fine body of water, and takes the Mud Flats again for a number of miles.

On the 3rd of September ¹⁸⁶⁸ I received a dispatch from Mr. Reed that Mr. Durant had telegraphed him to cover the line from Humboldt Wells East with men. "When can you give me profiles and map of lines? I shall make arrangements to send men out as soon as possible."

On September 4th, ¹⁸⁶⁸ I wrote to Mr. Reed as follows:

"I changed the line at two points west of 4100 and send you a new map and profile from that point to Red Dome, with alignment and bench notes. If you should not go to work on east slope of Promontory Point, I can review a part of the line, reducing the heavy banks at Sta. 3140, 3120, 3100 and 2980 and as soon as I get a party loose out west, shall go there with it. I hope to close our location in a few days.

You are no doubt aware of the contracting of 100 miles west of Promontory Point by the C. P. R. R. Co. to Bishops, West, Burns and Richards. I telegraphed you what they had done. Bishop Nichols also has a sub, is here waiting for them to locate. They let the work before they had a mile located, while our location was or nearly all done.

The entire 100 miles is very light work and if our company do any work west of Monument I should not go west of summit of Toans Pass up to that point which is 200 miles west of Weber, work is all very light, beyond that there is some rough work in crossing drainage of table lands. Heavy cuts and fills in gravel with chopped up grades and crooked lines.

The C.P.R.R. can without doubt meet us there or even at Monument Point, if they show proper energy--Monument Point is just half way between the ends of the Two tracks. I know nothing of the company's intention and under this new phase of the matter, but if you had the teams, you could cover the 100 miles with graders, even before they could. They have now only about 25 miles located, and that right over the easiest portion. They commenced staking out at Monument Point yesterday.

I have instructed all the chiefs of parties west to deliver notes and profiles to your Div. Engrs. should any of them go onto the ground, and to keep a copy of all notes for fear some may be lost going to you. As soon as I get through with my examination of the country in this vicinity, I will push west, get maps and profiles of the parties, and endeavor to send them to you via Ruby Valley. We go over Red Dome Pass with 65 ft. ascending and 40 ft. descending and very light work, hardly a cut or bank 10 ft. high.

The work on east slope of Promotnory will be good winter work, and I suppose there is no hurry about it as the C.P.R.R. abandon everything east of Monument Point and when they commence to grade will cover our stakes though sometimes we are a mile apart, at other, right on the same ground. They y commence at Sta 00 at Monument Point and number their stakes from east to west, marking their line "L".

On ¹⁸⁶⁸Sept 3rd I went out to Red Dome Pass and met a Mormon party who were one-half way down the slope who were getting along well. Met Maxwell and party in camp on Duck Creek waiting for water. I gave him a strong hint that it was the last time he should stop when he was with me. I ordered him forward with Hudnutt. The C. P.R.R. and our line which diverged at Monument came together again.

On September 4th, ¹⁸⁶⁸I camped all day at Wilton Springs and wrote Mr. Oliver Ames giving the whole situation and movements of the Central Pacific people as follows: ;

"Since I wrote you matters here have assumed an entirely new phase. Gov. Stanford came out, looked matters over and immediately let contract to Bishop, West, Bensen and Richards for 100 miles west of Monument Point. He also, at same time, abandoned all surveys east of that point, virtually acknowledging that he would not contend for that ground, and making the debateable ground still west. Monument Point is 90 miles west of Weber Canon and at the north point of Lake; it is also part or in vicinity of point where Branch line to Oregon would leave us. They had no line located over the contracted part, while my location covered almost the whole of it. I see considerable sagacity in the selecting of this point by Sanford and can guess on what ground he will contest his right to build to it, whether he gets there first with his track or not.

1st. When he let contract it was equi-distant between the two ends of track, being about 345 miles from each.

2nd. It is the point to which they succeeded in getting the President last spring to accept their located map.

3rd. By time they open work on it, say 10 th of Sept. it will be within 300 miles of the end of their track and come within the limits of the law.

Now, it seems to me that it is very poor policy for two companies to go on and build or grade two lines over this 100 miles. I could have made an arrangement with Gov. Sanford for our company to grade to a certain point and his to do the same, and the one who got their first with road was to go right on and use the others grading and that is the sensible way to do it; the lines over this flat, broad country are a mile apart, and an equally good ground. Again, I can see no good ground why the C.P.R.R. Co. cannot reach Monument Point by the time we do; they have less work, less snow to contend with and should we fail to get over Wahsatch, with work before winter, they certainly can reach there as soon as we do.

If you conclude to grade west of that point, then limit it to the summit of Toans Pass, 200 miles west of the Weber Canon. To that point it is 120 miles from Monument Point and the work is very, very light, mostly like Platte Valley work, Beyond Toans Pass for 20 miles, or more, you get rough work, heavy fills and cuts in gravel crossing the tables over the Mountain summit and it cannot be avoided. By this plan the only heavy work you would have, would be in the six miles on East slope of Promontory Point, leaving 214 miles of cheap work; and, if, by any mishap, you should reach further than Monument Point, then the work you would lose would be 100 miles of very light grading costing from \$2500 to \$5000 per mile. But, as I said before, I would make an agreement to grade on line from east to a certain point, say Red Dome Pass, 112 miles west of Ogden and let C. .R.R. grade from West to same point, and thus avoid the possibility of any loss by either party. You do not want to be grading 100 miles of road on an uncertainty and my plan would make a certainty of it. Another thing, you must remember is that the C.P.R.R are laying as much track per day as we are, and in their letting of work were not grasping, Commencing only at a point half way between the two roads, with the light end of the work with them.

I am in hopes to get two weeks time to spend on Promontory Point on that six miles of heavy work. I know I can save \$50,000 perhaps more if I can only have time and not be driven to death. The C.P. Co. spent, on that slope, two months, and when ordered away from there had not gotten three miles located, whereas, in two weeks, I had to locate eighteen miles of very difficult line, and six miles of it the most stubborn refractory country, on our entire line. If you do not open work on it before I finish location to Humboldt Wells, I shall go back there with a party and give it a careful revision.

Brigham Young told Gov. Sanford he would not take any work from him himself, but would recommend him to proper persons to take it, and recommended the present contractors; perhaps, you can see the difference tween tweedle dum and tweedle dee but I cannot."

On Septmeber 5th, ¹⁸⁶⁸ I received the opinion of the Hon. Wm. Everts, Atty. Gen., upon the duties of the Executive relative to the Pacific R.R., the acceptance of the same, and the issues of the United States subsidies thereon; also the agreement between the Government and the Union Pacific Railroad pursuant to the opinion of the Atty. Gen.

On September 5th, ¹⁸⁶⁸ Mr. J. L. Williams wrote me in relation to his action before the Board of Directors as follows:

New York.
"I wrote you a few days ago from this city. I now add that after reading to the Board a copy of my report of inspection and reconnoissance, I offered a resolution similar to the one I showed you at Ft. Sanders, 25 per cent of Government bonds out of each 20 miles till it reached 3,000,000 to be held in trust for permanent masonry structures, earth embankments, equipment, water supply in Dry Desert, etc.

Mr. Brooks offered a substitute which I enclose as adopted. It may be of some service as it recognizes the principle. Mr. B. told the Board that Attorney General would find power in the President to go back of the Commissioners, and review and bring up to the standard the sections which they had accepted. Mr. Cisco says resolution will help him in selling first mortgage bonds. Some assurance to the public of the kind is necessary. Mr. Brooks sent a copy to Everts, who has not yet made final report, but who had advised President to issue bonds as heretofore for the present. By this time the Commissioners have probably accepted the dry Desert without any water stations or promise of any-the track being laid by water tank trains from Rawlins Springs. I dont see how they could do it.

My duty has been an exceedingly unpleasant one the last three months. The Doctor calls me a "watch-dog" for the Government-that I care nothing for, but most of the parties I respect and probably they respect me, but, of course, cannot feel kind. I have done them no harm in the end. The road will go rapidly on.

As soon as possible I want you to give me the outline of the location west, and how far you think this Company will build, and where in Salt Lake Valley will probably be the main point for shops, rolling mills, &c. Give me level of Salt Lake above the sea. What maximum do you use on Promontory Point and what thence to Sierra Nevada? My profile was well received, but I have not the exact distance by final location from Missouri River Bridge to mouth of Weber Canon. I call it 1020 miles. Write to Ft. Wayne.

I find that I was put off the Bridge Committee on July 3d and Brooks put on. I am quite satisfied, controlled as the Bridge will be. The Committee is McComb, Bushnell, Duff, Dillon and Durant, of course. Bushnell proposed to Board a resolution allowing a tariff to bring 20 per cent on capital, besides repairs, &c. To this I objected and it was put at ten-the same as at Quincy, but, of course, the Executive Committee will change it. There is a big speculation in it in some shape. Of course I knew before that Boomer would get the Bridge nominally, though I think it is all one interest. It is between him and the Keystone Company. As shown to the Board, Boomer is \$100,000 less, but I presume Keystone bid was seen before Boomer's was finally fixed. I have seen enough to convince me that the Bridge letting was a mere farce. The bids were referred to Col. Trimble of Lee's Staff, and

Col. Merrill, now on Sherman's staff. They report on the strength of the Keystone and the Post Bridge. Merrill reports them equal. Trimble gives a decided preference to Keystone. Partly on the ground of the name though and test and long use."

On September 5th, ¹⁸⁶⁸ Mr. Egan, whom I had sent to look after timber in the mountains, arrived at my camp with two Indians, having lost one man on the trip. Found lumber but in limited quantities on Raft River Mountains and on head of Surprise Creek.

On ^{Sept. 1868} the 6th, I received letters from Mr. Hoxie informing me that Mr. Snyder had been called to New York. He says: "They are determined to drive me out, but time will tell."

I also received the following from Mrs. Dodge:

Council Bluffs, Iowa.
"There are many strangers coming in this fall. The papers and telegrams this morning say that the bridge contract is let to Boomer of Chicago, one of your friends, I believe, and so if you want to get in it you better hurry home. Can't you take part in that bridge next year and make enough at home to pay for leaving the road? And then we could build our house, too, or get ready for it. I wish you would. The bridge is going to make this place, and next spring property will be high and sell well, and I think right here in the course of next year you can make a fortune if you are only free from the R.R. and can give your attention to your own interest instead of the Company's."

Hoxie is crossing his material on his own boats-now uses the Montana for a ferry. We have beautiful weather now, cool and pleasant and I would like to take some ride, so hurry home. I hope you will not be careless in coming through the Indian country. The papers now are full of stories about them and I guess there is some trouble. Have your pistols with you and be careful."

On ^{Sept. 1868} the 7th, I received a dispatch from Mr. Reed at Echo City that Bent's outfit wished to commence operation at Humboldt Wells and work East and if ~~his~~ engineers did not get on the ground as soon as required he wanted me to detail one of my parties to take out work with them.

On ^{Sept. 1868} the 7th I moved camp to the Reese Road. Capt. Wells of the escort with company and train started East, leaving Lt. Adams ten men and six wagons to go on with me.

On ^{Sept. 1868} the 8th, Mr. R. G. Hazard wrote me the following letter in relation to the orders entered by his protest:

Peace Dale, R. I.
"You have no doubt often heard of the charges made of the Company against Durant. My brother (with others) has instituted proceedings against him in this state, and I take the liberty of asking you to obtain some information at Omaha in such way as you deem best. I think it desirable to ascertain as soon as possible what account Mr. Hoxie will give of his contract with the U.P.R.R. Company."

Mr. Oakes Ames has already made affidavit that Durant stated that the whole profits of that contract were to go to the Credit Mobilier, and others will do the same, but it is claimed that Durant took over \$400,000 of it himself, and I believe the account

C. M. M.

will show that the amount of profits was paid away from the Co. I suppose Hoxie will say that he had no real interest in the contract, and did not get much if any of the profits, but only a small sum (if anything) for his trouble. That he never did anything under the contract in the way of constructing the road.

I think it probable that Mr. Ham will be willing to aid in obtaining the information. I am the more careful to not ask aid from the officers and members of the corporation, because most of them think it expedient to keep matters smooth with Durant, but as I know of no one to apply to outside at Omaha, I think it best to write you confidentially on the subject and let you adopt such course as you deem best. The truth should not be concealed, though Mr. Durant does not seem so grateful for the opportunity of exculpating himself from suspicion as might be expected.

Our State waits on above suspicion and if he removes the case to the U.S. Courts he will probably fare no better, though he may make the proceedings more tedious and expensive.

Hoping that you will see in the facts a sufficient apology for my thus troubling you, and will favor me with an answer at as early a day as you conveniently can, &c."

Sept. 1868
On the 8th I moved and camped near Maxwell Springs. There was plenty of water all the way.

Sept. 1868
On the 9th I stayed in camp looking over the line west with Maxwell to Surprise Creek; also concluded to take trail at foot of Ombee range and reach approach to Toans Mts. by a tangent. Went as far as Hudnutt's camp-rode 50 miles and back in a day.

Sept. 1868
On the 10th I moved camp to the foot of Toans range of mountains; I received a dispatch from Reed acknowledging receipt of maps and profiles and stating that Major Bent's outfit goes West to commence work at Humboldt Wells by order from New York. Casement will follow in a few days with teams enough to make 500 in all. He asked me to set the party to work and said that the work was progressing well, men were uneasy and would not stay long in one place.

Sept. 1868
On the 11th I was in camp all day. Egan and an Indian got in from Pilot Peak. Found good Balsam, fir and pine on west slope and plenty of shrubby cedar for wood.

Sept. 1868
On the 12th, Mr. Blickensderfer took latitude of the camp which is where Passage Creek comes out of the mountains. Latitude $21^{\circ} 40'$. We measured Pilot Peak and found it 10800 ft. high, 6700 ft. above the desert.

Sept. 1868
On the 13th I moved the camp 15 miles to Moore's creek on the old trail. Found grass, water and timber. I pushed on over the summit and found water six miles west of camp, just over the mountain. Climbed the mountain until I could see Toans Pass, Cedar

Pass and the Humboldt Range; also Thompson's Spring. Valley to north west country opens into an immense park and has several mountain ranges covered with pine and cedar.

^{Sept. 1868}
On ~~the~~ 13th I wrote to Mr. T. C. Durant on the work West of Promontory, the country, etc., as follows:

"I send you by W. F. & Co. express profile of line from Weber West and will as soon as I can get it up send estimate, but this will ~~not retard~~ work.

You will notice, we ascend the Toana Mts. making an ascent of 1500 feet with 65 ft. grade and no work to speak of. The 20 ft. bank near sta. ~~————~~ I shall decrease as I check up the line on my return.

On some of the difficult parts of the line, I shall work until graders arrive endeavoring to help it. From Red Dome to Toans Pass the line is about straight, and I must gain a good deal in distance over C.P.R.R. though I have learned since I left Red Dome that they are following my line over that Pass very closely. That is a point we ought to grade immediately if we do anything west of Monument point, as possession of ground is of great advantage to us. Both lines occupy nearly same ground, in fact at all central points on entire line, they locate very nearly on our line.

Two corps of their engineers passed east today going on location on the 100 miles west of Monument Point.

On Pilot Peak ^{and} on Ombee Range of Mts., there is considerable timber, pine and cedar, out of which ties can be obtained with say 15 miles haul.

On Toana Range there are large bodies of cedar and pinion pine, in fact the range of mountains is covered with it, but very little of it is fit for ^{use} now and then a tree that will cut one or two ties, all the timber in this country is short and scrubby.

At foot of mountains and on all the streams is fine land that can be used by proper irrigation and it is a very fine country for stock, plenty of hay and grass. I have no doubt stock will winter all through this country on the grass and rushes; land is evidently not bad at any point after even reaching the summit 6200 ft. above sea, there are no such barrenness as seen on Black Hills and at Wahstch, and I see no trouble from that account. Wells, Fargo & Co. ought to put their stage line on here, running from end of each road, it is a fine stage route without one drive, without water and grass, and would save passengers 200 miles stage travel. If they do not do it some one ought to; it would increase through travel.

Bridging on this line will be very light. Ogden and Bear River being the only streams of any importance. The drains and culverts can all be built of stone on line as graded, as rock suitable for masonry exists all along the line. It will be cheaper than to transport timber from the East. I find very little timber in this country fit for sawing or squaring purposes."

^{Sept. 1868}
On ~~the~~ 14th I went to Hudnutt's camp. He had finished the line down the East slope of Toana Pass to the East slope of Hodges' connection. Returned to camp by way of the old trail. Pass is very rough and mountainous. From the top of it I could see the Thousand Springs Valley between Peguop and Toana mountains. I learned that Ives of the Central Pacific went east to Surprise Creek to commence the location; also learned that Ives found the general route of the line from the top of Pilot Peak. From that point one can see

all the passes through Toans, ^{Peguop} and Humboldt; also can see the Sierra Nevada and Wasatch Peak.

^{Sept. 1868}
On the 15th I had a discussion with Mr. Blickensderfer on the difference between a ninety and forty foot grade on overcoming the same elevation. In theory it costs just as much to rise 2000 ft. elevation with 40 foot, very light grade, as it does with a 90 ft. but in practice it is not true. as all roads are cutting down grades. The only way to obtain the real difference is to ascertain the cost of running a certain distance with a high grade and then running the same distance with a low grade, both overcoming the same altitude, including cost per mile and per cent over and above cost of repairs, track laying, wear and tear of machinery. This can only be done in going into the matter methodically and practically.

^{Sept. 1868}
On the 16th I was still in camp on Moore's Creek. Hodges passed west and camped at the summit ^{near} Canyon Springs. Maxwell was in camp with us. The slope of the Taon mountains is covered with fine groves of cedar dwarfed, good for fuel, but few ties. Moore's Creek fine stream of mountain water, plenty of wood and grass. The variation of the needed is $17^{\circ} 35'$.

^{Sept. 1868}
On the 17th I moved camp to Pequop Pass Creek. Hodges pushed on to Pass Creek; concluded to try line from both summits running down valley leading to Thompson's Springs to ascertain distance, elevation and grade.

^{Sept. 1868}
On the 18th I went west to the summit of Cedar Pass with Maxwell and Blickensderfer and put Hodges to work on the East slope and examined both of Ives' Central Pacific lines. I learned that McCabe had gotten half way down the slope towards Humboldt Wells.

^{Sept. 1868}
On the 19th I went East and examined the country for a change between Toans and Pequop Pass and concluded to ~~make~~ it. Maxwell and Hudnutt connected their trial lines. Morris arrived with his party and went into camp with us. In examination of Morris and Maxwell's location, I ~~thought~~ it should be changed so as to bring Maxwell's line around the point of Surprise Creek and also that an entirely new line should be run from Red Dome to Surprise Creek, following very

nearly Hodges preliminary.

I was in camp all day on the 20th.

On the ^{Sept 1868} 21st I received the following letter from Mr. Reed:

Echo City
"The track last Friday evening was at Point of Rocks; have not heard from it since. Bent has gone west with large outfit to commence operations at Humboldt Wells and work east. Casement's and Boyd's outfit are on the road to commence one hundred miles east of Wells and work east. My orders are to do the grading on that portion of the road as quick as possible. Shall have five hundred or more teams on the work very soon.

Dr. Durant and party leave Chicago this morning for Salt Lake. I send transportation to Green River to meet them Friday next.

Carmichaels has completed his work on east side of river and moved all his force to west side; twenty days will complete work at and twenty miles west of Green River. All the work to head of Echo is progressing satisfactorily. Deep cut at rim of basin will be completed by October 10th. Tunnel at head of Echo drove 60 ft. at each end. Rock soft, make 6 feet per day at heading; obliged to timber it.

I sent letter by Bent asking you to detail party to stake out work until my engineers get on the ground. Two engineering parties have gone forward, one with Bent and one with Casement's outfit. If you have any parties to spare they may commence staking out at once. Please let them do enough to keep all men at work that may reach the work."

On September 21st ¹⁸⁶⁸ I received the following letter from Mr. J. L.

Williams:

New York
"Yours of 1st of September at Red Dome Pass received. From this I gather 1st that you expect the two lines to meet at Monument Point 90 miles west of mouth of Weber Canon. If the meeting point is likely to be anywhere else, please advise me. If mouth of Weber is 1020 miles, then our Company will build 1110 miles. Please give me the correct distance to mouth of Weber Canon. 2d- I gather from your letter that there is but 6 miles of very heavy work, and this is in the eastern slope of Promontory range with 90 ft. maximum grade. About what will the grading of this 6 miles cost per mile?

They assured me at the office that no change was made on the Wasatch and that the grade remains at 90 ft. maximum and I have so reported to the Department. Inquire into this upon your return and inform me if there is any increase of grade. Also advise me whether there is much temporary track laid at heavy points west of Ft. Bridger, and where and about how much it will cost to grade and open the proper line where there are deep cuts or tunnels. Also whether they are building masonry abutments on the Weber and Echo, or are crossing the streams with 16 ft. span trestles. Also whether you understand that masonry piers are built on the Wasatch and down Bitter Creek to much extent.

I reported \$3000000 in Government bonds as required to be applied wholly on the sections which the Commissioners had accepted and will accept to bring the road up to a proper standard including more rolling stock, shops, water supply, etc. and I am in good earnest and so they are at Washington have this sum applied. I think the Atty. Genl. will report power in the President to go back of the Commissioners and review on sections they have accepted. The resolution of the board differs from the one I offered in setting apart 1st mortgage bonds and these on the last 100 miles. It is not entirely satisfactory but embraces the principle. As soon as you can learn which part of the line will be their last 100 miles, let me know.

I presume you are not going through to Oregon, and so shall expect you back to Salt Lake and further east pretty soon. The Doctor and Col. Seymour have gone out, and Mr. Crane is going.

You inquire about political prospects. I saw at Washington two days ago Colfax and Morton, Depue and others. All these gentlemen are very confident that Indiana will go right in October from 5 to 15000. Pennsylvania is generally considered as sure. Ben Wade says that Ohio will give the old-fashioned majority-near 40,000. With these results possibly New York may go with us. It may be we shall lose half or more of the Southern States, yet I see no one on our side who doubts Grants election, and on the other side I think they are not sanguine of beating him. The current sets that way and I think will gain strength. I go over to Jersey tonight to meet John I. Blair, where he is to dedicate a wigwam.

Before you leave that country I think it would pay to get the exact level of Salt Lake. If you lay your line near its level you had better keep up pretty well, for I have a theory that when the country gets settled and ditched out and tramped by stock up the numerous valleys, a far greater proportion of the rain and melted snow will run into the Lake than heretofore, and its surface may gradually rise for fifty years.

I obtained at Ft. Bridger the monthly fall of rain for one year, only 4 1-4 inches, but this did not include the snow. The Government at all its military posts should require a rain gauge to be so kept as to include the water contained in every fall of snow, so as to give the annual depth of falling water."

On September 23rd ¹⁸⁶⁸ Mr. Snyder wrote me that 820 miles of track were ready today and that Mr. Durant was sick in Chicago.

" Seymour and family and Gen. D. C. McCullum reached Omaha yesterday. Seymour has been pushing McCullum for General Superintendent for some time; thinks from New York correspondent they may accomplish it. He says; "Don't care a damn as I am sick of the constant fight and would rather work elsewhere." Hoxie named the town at Blacks Fork Bryan, after his boy. I had been endeavoring to get a true sea level from the Atlantic to the Pacific and on September 23rd Mr. Blair wrote me from Burlington, Iowa in answer to my request as to the difference in elevation between Lake Michigan at Chicago and some point in Council Bluffs. He gave the switch near the water tank on the C. B. & St. J. railroad at Council Bluffs as 383.5 feet above Lake Michigan at Chicago.

Morris closed his line with Hudnutt about noon on September 23rd. I sent a telegram to Mr. Reed that I had placed Maxwell on construction and on the ^{Sept} 23rd I wrote Mr. T. C. Durant giving him the progress of affairs West of Ogden, as follows:

"The first graders arrived on the ground Sunday the 21st. I sent a party over Monday and started out a few miles at Humboldt Wells and set them to work Monday. The controlling points of this line are Promontory, Red Dome, Toans Pass, Pequop Pass and Cedar Pass. On Red Dome and Toans Pass we should occupy the ground as the first to occupy it will have great advantage, it being necessary for light work and light grades to build our line on same ground located. I wrote Mr. Reed this sometime ago. The C.P.R.R. have not located over Toans yet and I suppose have just about got located over Red Dome. Red Dome is most important to us. They have no location at Humboldt Wells. After giving the country for 40 miles east of Humboldt Wells, i.e. from Toans Pass west, where the 20 miles of rough work occurred, that I wrote you about before I concluded to change the line increase the distance and throw out entirely, all the heavy work which has been done, and now you have light work as comparatively light work all way from Weber to Humboldt Wells, except the six miles over Promontory. The alignment is good, grades easy, and grading over the change I made, will cost two-thirds less than on old line. It is a very cheap line for its length, as you will see by profile heretofore sent. I have also been running lines over the South route over the controlling points, via Toans and Pequop Mountains and the result is that the line is impracticable when compared with North Route. Taking line at Granite Rock, which is at south point of desert, it covers 26 miles of mud flats to Sage Plain, then 13 miles over Sage Plain to Toans Range of Mountains, it ascends these mountains to Don Don or Goshoot Pass, 1566 ft. in 13 miles. Ten miles of it very heavy rock work, far heavier than any on the road; it then descends four miles to Goshoot Desert, 363 feet. Then follows Goshoot Desert to Hastings Pass through Pequop Mountains, ascends 306 feet in 2 1/4 miles. This Pass is impracticable; work too heavy and grades too high. The only way to get a line to south is to start from Granite Rock, cross desert to Toans mountains, work along the East base of the mountains to the Pass near Pilot Peak, thence north to the Pass we go through and then take our line to Humboldt Wells. This would increase the distance largely, give us 60 miles or more of Desert, but would give us a practicable line over Mts. but work getting up to Toans Pass would be heavy; also, work at Pilot Peak Pass would be heavy, I consider the South route as compared with North route far inferior in fact, impracticable. I am running another line over it and will have a connected line there I can give full comparison on as my work is completed here I shall work east, by south side of Lake, and shall put one party to work on Promontory Point to endeavor to lighten work there; also a party to determine the location of our line from Weber north and connect it with government surveys. To do this will have to run up one of government base lines and get the odd and even sections on our line, so that what towns and points we locate in Valley we can get on our own properly.

The C.P.R.R. have opened work between Monument Point and Red Dome, some 25 miles which is about the extent of their located line, though now they have four or five parties west of that point on location. Their track is 140 miles west of Humboldt Wells and the graders 40 miles west. I have sent you a profile of entire line as now located, and shall remain here staking out work &c. for a short time so as to be sure that the graders on arrival can pitch in, as I learn they have no engineer with them. Mr. Reed's engineers I suppose will be here soon and part of my engineers I shall turn over to him. The C.P.R.R. are laying track very fast. I have had a man there a week and they lay 2 1/2, 3 and 4 miles a day; work moonlight nights when they have material; have let large wood contracts through here to be delivered at Humboldt Wells by Jan. 18th. I see no reason why their track can not reach that Point by that time. They seem to have plenty of iron, but cannot determine how much. They say, enough to lay 200 miles from Gravelly Ford"

I also set the contractors to work at Humboldt Wells. The Central Pacific track was then 140 miles East of Humboldt Wells.

On ~~Sept~~¹⁸⁶⁸ 25th I moved my camp to Independent Springs. The latitude of that point, three miles east of the upper Humboldt Wells, is $41^{\circ} 6'$. Mr. Snyder wrote me that on the 26th Mr. Durant left Chicago enroute to the end of the track.

On ~~Sept~~¹⁸⁶⁸ 27th, my sister Julia wrote me from Council Bluffs as follows:-

Council Bluffs, Ia.

"Annie is upstairs reading, and I have come down in the parlor to write you. I have thought I would several times but have really not found time, but now that I have finished everything and have a little leisure before I leave the state of single blessedness will write you before signing my death warrant.

I feel very badly to think you will be absent next Tuesday and had I not been confident that you would be here I should have changed the day till later; for with both you and mother away it seems as though I was being sent out of the family in disgrace; the more I think of it the worse I feel about it. Sue is going to give me a large wedding, over 140 invited. We are to be married Tuesday morning, Sept. 29th at 8.30 o'clock by Mr. Little and then leave on the 11 o'clock train, go to Conn. and Mass. You will probably be here when we return. I have hoped to the last minute that you would get Annie's letter and come home.

Little Annie is so smart; she grows brighter every day she lives, if you could hear her talk you would be astonished. I am loth to give up my charge of her; feel as though she more than half belonged to me.

Mother I hear from every week; she is quite gay down East, everything and everybody is beautiful, and she feels 20 years younger. Everybody meets her so cordially, that she feels doubly repaid for her long and tedious journey.

There is little news here. We have managed to get a fire engine and that has raised such a commotion in town, I don't know as it would do to stir them up suddenly again.

Mr. Hoxie has been very sick indeed with typhoid fever; is slowly recovering. Lettie and Ella attend the seminary constantly.

Mr. Rice surprised us a week or two ago by dropping in one evening. Said he would call again, but did not, so supposed he went right to Oskaloosa.

Him has come to take me riding so will close. This is probably the last you will hear from me singly; hope you will be here when I return. All send love."

On ~~Sept~~¹⁸⁶⁸ 27th Mr. Jesse L. Williams wrote me that the Company had let the Missouri River Bridge and had laid aside \$3,000,000 to build culverts, &c. The bridge letting, I knew, was a blind. I also received a letter from Mr. Hazard about Mr. Durant and his operations; also from James F. Wilson, Government Director who says Mr. Aes must be able to show a clear hand or it will be hard with him.

Mr. Blickensderfer started east on the line to dress it up where needed. The construction department was badly behind out there.

On ¹⁸⁶⁸ Sept 29th, I moved my camp to Humboldt Wells and rode down to the end of the line. Met Mr. Thompson who lived ten miles down the Humboldt, who says all the Central Pacific graders are within twelve miles of the canon. I rode over to the North Fork of the Humboldt and then up Pryamid Peak. A fine sulphur spring flows out of mountain at foot of Peak.

On October 1st, ¹⁸⁶⁸ started to examine route by south end of Salt Lake, moved camp 35 miles to Warn Spring Creek; marched the full length of the Clover Valley, a beautiful valley fast settling up. On new ground they raised 30 bushels of barley and 40 of wheat, selling from 5 to 8 cts. ^{per lb.} in coin. The Shoshone Indians do a good deal of the labor on the ranches; now, harvest, dig potatoes, &c. Their baskets are very fine--made like a reverted cone and hold two bushels, and the squaws pack them with potatoes. Ruby Valley, which joins Clover on south, is filled with good farms. The pine mountain silver district about 140 miles south of Clover is attracting great attention from the great mine of silver; the wall rock is limestone.

I gave instructions on October 1st to Mr. McCabe on his line south of the lake, as follows;

"You will continue your line on the south side of Lake from Goshoot or Don Don Pass East, running from the summit East with a 90 ft. grade until you make the descent to the desert; then to Granite Rock on south point of Cedar mountains and from there to Great Salt Lake city on most practicable route which will probably be up Lone Rock Valley to the lake, and thence along border of Lake to the city.

I desire the topography of line fully taken also the topography of the country by triangulations connecting the line with all the peaks and prominent points to be seen from it, so that we can make an accurate general map of the country. When the survey is finished you will make a profile, map of line and also a general map of the country and submit an approximate estimate of the lines, making your report to Mr. Blickensderfer, who will also give you further instructions when this line is completed.

Where the natural rise of the ground exceeds 65 ft, ^{use} the grade as is best fitted to the ascent or descent but endeavor not to exceed 90 ft. to the mile."

1868
On October 1st I also gave instructions to Mr. Hudnutt to run the line to Portland, Oregon, as follows:

"As soon as your work is completed at Promontory, you will run a preliminary line from our located line through Raft River Mountains and down Snake River, having as the objective point ~~Portland~~ on the Columbia River, commencing so that a connection can be made with our line at any point between Monument Point and Sour water springs.

I desire to push the line as fast as possible, and as soon as you get into the Snake River Valley, where the running is plain, and your party can run without your presence, I desire you to go to the Grand ~~Rhonde~~ Valley and there make a personal reconnaissance of the Blue Mountains Range so as to select the most feasible line over that range.

We desire to decide the practicability of the route this fall and ascertain what grades we will have to ~~adopt~~ in building the road.

In crossing the Raft River Range or any range where the grade exceeds 65 ft. to the mile, run an angular grade line to such a grade as is best fitted to the ascent and descent of the ranges."

1868
On October 2nd we marched 25 1/2 miles; camped in a dry valley without water. I rode forward ten miles to water and found it in the Steptoe Valley. The ascent from Warm Springs to summit south of Antelope Butte and Pequop Range is by barometer 556 ft. and descent to Steptoe Valley Spring is 823 ft. The ascent to Pass is apparently good but descent if made with 90 ft. will add greatly to distance forcing line far up the Steptoe Valley.

1868
On October 3rd, Mr. Snyder wrote me that "Mr. Durant had gone to Salt Lake and had McCullum with him. The Seymour outfit have spread the news that McCullum is to become Superintendent and the whole system is demoralized again. I went out with Mr. Durant as far as Wood river. He was sick and did not talk much. I think he is beginning to appreciate part of the Seymour outfit and will oust them."

1868
On October 3rd I marched 10 miles and camped at Twin Springs; met an Indian scout guiding some movers to Humboldt Wells with thirty cattle. They were camped at Twin Springs on the West side of the Stepto Valley; also met Poganewi and his sons enroute to Ruby to trade. From Warm Springs to first water is 30 miles; water is at north point of mountain at head of Spring Valey. Pony Express once run by it. I camped all day to give stock rest and feed.

On October 4th, ¹⁸⁶⁸ I marched 25 1/2 miles and camped at Antelope Springs. Small patch of potatoes and small patch of barley here belonging to Indians. Passed through Steptoe Valley and over Goshoot Desert, a plain of sage and greasewood. The Pass at Antelope Butte is practicable but grade may be heavy and more of work. I judge pass to be 6300 feet above the sea; could see Hosty's Pass and Toans Pass.

On ¹⁸⁶⁸ Oct. 5th I marched 30 miles; made a dry camp on the edge of the desert. I had in view today from a peak near edge of Desert Granite Rock, point Lookout, Cedar Range, Desert Mts. Pilot Peak and entire Toans Range. The approach to Goshoot Pass from east will be difficult and alignment bad and heavy work. A tangent from foot of grade to south point of Cedar Mountains can be obtained. I find on map here that there is 13 miles too short distance between Deep Creek Mts. and Goshoot Pass; Deep Creek wants moving east 8 miles to make map correct.

On ¹⁸⁶⁸ Oct. 6th I moved to Deep Creek, 26 miles from Antelope Springs. Camped at the Stage Station at noon. Stage leaves in the morning. Deep Creek has fine water and fine body of groves with very good farms. The Goshoot Indians camped all along it.

On Wednesday ¹⁸⁶⁸ Oct. 7th, I took stage for Salt Lake, crossing the desert all day. The country was very dry and desolate and on the 8th I arrived in Salt Lake early in the morning. Met Mr. Durant at the Townsend House. I received notice here from the Interior Department that Mr. Blickensderfer had been appointed one of the commissioners to examine the Union Pacific Railway and notified him by telegraph. The continual differences in the New York office and the Union Pacific finally alarmed the Government and they appointed a commission consisting of Jacob Blickensderfer Gen. G. K. Warren and James Barnes.

On ¹⁸⁶⁸ Oct. 9th I received a telegram from Mr. Ames to meet the commissioners on the 17th at the end of the track. I also received a letter from Mr. Snyder stating that he hoped to open

the track to Bryan (Blacks Fork) on the 19th inst. He also wrote that Mr. Durant went through the Col. and Mark. Seymour, Reed and Co. outfit as soon as he got a good look at their work, at and west of Green River. McCullum spent two days here taking notes. I gave him every facility to look through all departments and don't think he wants to try his hand on the U.P. If he tells the Directors what he promised to, they will not print his report. For two months past I have been able to keep more material at the end of the track than could be disposed of.

I also received a telegram from Mr. T. E. Sickles announcing his appointment by the Bridge Committee of the U.P.R. R. Co., "engineer to superintend the construction of the bridge over the Missouri River under the direction of the chief engineer."

I learned that the Commission of which Mr. Blickensderfer was a member was appointed to examine only the U.P.R. R., which I had considered a great injustice, and on October 10th I sent the following telegrams:

"Oliver Ames:

The Commissioners should be instructed by the government to examine all Pacific Railroads receiving a subsidy from Government. It is unfair and unjust to select our road in order that other roads can make capital out of it, with hope of delaying our progress. I will meet the Commission."

Gen. J. M. Schofield: Sec. of War.

The Commissioners appointed to re-examine the Union Pacific Railroad should, in justice to the government, be ordered to re-examine all the Pacific Railroads receiving a subsidy in bonds. The Union Pacific Railroad is better constructed than any other and should not be placed in an unfair position by selecting it and leaving all others out."

Hon. Hugh McCulloch: Sec. of the Treasury.

In justice to Government, the Commissioners appointed to re-examine the Union Pacific Railroad should be instructed to re-examine all Pacific Railroads and branches, receiving a subsidy in bonds. This is right and just. Selecting the Union Pacific Railroad alone, is a reflection that it is not so well built as the other roads. When the fact is, it is better built. I have no objection to the examination, but let it apply to all the Pacific Roads and branches."

On ^{Oct. 1868} the 10th I received the following letter from Mr. House showing the work of Mr. Lane and Mr. LeRowe, two construction engineers interfering with the work of the company:

Omaha. Neb.

"We have been pretty lucky all summer. When we left location we beat the company out of \$600 worth of grub, and one board bill from May 1st to October 1st was less than \$50. We have our teams at work on the grade, two span of mules, at \$8 a day each, so you see we manage to keep even. Not satisfied with that we turned contractors and set our teams at work hauling stone, and we built a culvert. We worked very hard for four days and a half and finished it netting each man \$71. We have gone into the real estate biz. also, Mr. Reed located a station here on land occupied and owned by a Mr. Granger. He got us to lay out a town and we did so, receiving for our share one half. You can see he didnt want to be at all hoggish. Now this site is considered by everybody to be the best this side of Laramie and quite a central point-being at the junction of Ham's and Black's Forks, and at the crossing of the road to the Sweet Water. In a few days the question will be decided whether the machine shops and round house will be located here or not.²

I send you this that you may see the rascality that is being perpetrated on the road by the employees on construction."

In my interview with Mr. Durant in Salt Lake, I tried to impress upon him the folly of our spending any money West of Promontory Point. I was satisfied that it would be impossible for us to reach beyond that point with the track, but he stormed a good deal about it, but finally sent the following dispatch to Mr. H. C. Gray who was a representative of the Central Pacific:

Salt Lake City, Utah.
"Understanding that the Central Pacific and the Union Pacific R.R. Companies are both at work grading a section of road for a distance of one hundred miles or more parallel to each other, I make the following proposition to prevent unnecessary cost to either company. Take the average cost of the line per mile ready for superstructure between Weber and Humboldt Wells, provided the work done by the Central Pacific is as good as that we do and the same as well located, and let either party pay at the average cost for as much as they lay the iron on. Each party if preferred to grade an equal portion of the distance. You will please reply within three days by telegram to me at Echo City."

1868
On *Oct.* 11th I started East to the end of the track by the line and with me were Messrs. Durant, Reed, Seymour, Root and a French countess and Miss Young. I was taking Miss Young along for the purposing of visiting one of the bishops, her people asking me to do so. When we reached the Bishops, I supposed Miss Young would stop there. I was away from my train all day and when I returned at night, I found her still with the train working her way east, evidently trying to get out of Salt Lake. I knew it would not do for me to aid her in escaping and told her that

she would have to return to the Bishop's house. She protested very strongly and I greatly sympathized with her. I learned that they were trying to induce her to be sealed to one of the bishops as a plural wife, but I told her frankly that I could not help her escape from the territory but that I would write to Brigham Young about the matter, which I did. I wrote him a very strong letter giving him all the facts in the matter. He stopped the marriage, I think, more from the fact that I did not propose to make any publicity of the matter unless the girl was forced to accept this bishop, but if she did, the story had become so well known among my whole party that it would be impossible to keep it a secret.

On ^{Oct. 12th} ¹⁸⁶⁸ Mr. Blickensderfer wrote me stating that he had received the appointment from Judge Otto as Assistant Secretary of the Interior; that Hudnutt had finished his work and the Union Pacific graders were at work from Surprise creek eastward; doing good work. The Construction engineers had full notes; that the Central Pacific graders were just commencing at Surprise Creek and from Terrace Pass Eastward were working in full force. Much of the line from Terrace Pass to Red Dome is graded and east of this still more is done. The Central Pacific have followed our line closely for much of the way.; on both slopes of the Red Dome had destroyed our location. he decided not to replace our stakes as they would have to be placed on their work and undoubtedly would be taken away again. He notified Judge Otto of his acceptance of the commission and stated to me in his letter that he was not especially desirous to accept this commission, but had great confidence in my judgment of the propriety of the course.

On ^{Oct. 12th} ¹⁸⁶⁸ I received an answer from Secretary of the Treasury, McCullough to my dispatch as follows:

"I understand that all the Pacific Railroads ^{Washington} are to be examined again. The Union Pacific first because the advances to it are the heaviest."

On the 12th of October, ¹⁸⁶⁸ Mr. Blickensderfer wrote me as follows:

Red Dome, Utah

"Since writing my previous note, I have been thinking more about your account of Durant, Seymour & Co., and their statement in regard to location, etc. You will remember that I telegraphed you at an early day that contractors were making no preparations to begin work in Weber narrows and at the tunnels, and it is true that the location at both those places was ready before contractors were on ground or had shanties or tools. Weber Canon was ready on 10th of June as I have heretofore advised you, and I say head of Echo, rim of Basin and all important points were ready before contractors were ready or had men and tools on ground, unless we make an exception of Miller and Patterson and John W. Young, who might possibly have worked a few men 24 or 48 hours before they did, but not more. Seymour's and Reed's interference with my parties kept Weber narrows, tunnels and Weber Canon back at least a week or ten days; but the fact is, they would not work in Weber Canon when it was ready, simply because they had determined not to construct my location if they could avoid it, and held off in hopes of compelling or accomplishing a change."

Oct.

On ~~the~~ 12th I rode to Ogden with Mr. Durant. He instructed me to locate the road from Ogden to Salt Lake; one on the table land and another next to the lake.

Oct.

On ~~the~~ 13th I examined the line to the head of Echo and drove to Bear River.

Oct.

On ~~the~~ 14th I rode over to Reynolds and Darling's work on their summit cut, and Bent needs his force. Drove to Chrismon's camp and saw Evans, McGregor and Carmichael. Am confident grading will be out of way.

Oct.

On ~~the~~ 15th I rode to Whitman's camp and stopped all night. Bridges at Black's Fork, Ham's Fork, &c. slow. Need more men and a better organization.

Oct.

On ~~the~~ 16th I rode to the end of the track at Bryan. Seymour said that he had no doubt that Congress would rip up the Commissioners report, whatever it might be.

Oct.

On ~~the~~ 17th I went by rail to Benton.

Oct.

On ~~the~~ 19th Mr. Ames wrote me as follows:

Norah Easton

"Gen. Barnes starts today from New York to join his commission to examine the road. I think he is all right as to our road. He takes out Dr. Chaffer of Springfield with him. The Dr. thinks that the Commission will make him their Secretary, as they will naturally want some one and he will probably be appointed as he will be with them and will offer his services."

✓ I understand their instructions embrace not only the examination of the road, but they also have authorized them to decide the location west of Salt Lake, and fix the line on which the two roads shall run, so that no grading may be lost. Blickensderfer knows these lines and is just the man to decide this question properly. ✓ I hope you will be able to make such an impression upon them as to the road and the location where they have to decide it as will induce a favorable report.

I received your favor of Sept. 25th, from Humboldt Wells. The new location you have made I understand is entirely superior to C.P. R.R. location, and there can be no doubt of its adoption on a candid examination of its merits. It is fortunate that we have the line so recently surveyed, and that we have the privilege while the survey is so fresh in your mind to present it to the Commissioners."

Oct. 1868
On the 18th I met General Warren and Judge Otto of the Interior Department at Sidney, enroute West; also Snyder and Webster, and on *Oct* 19th arrived at the Bluffs.

On Tuesday the 20th, *of Oct.* Mr. John B. Alley, one of the Directors of the road arrived. He informed me that in July, contract with C. M. was broken and trustees are building road and dividing profits pro-rata among the C.M. stockholders; that the Union Pacific stock holders had not consented to the contract and it is therefore void; that Hazard has commenced suit against Durant for amount of his subscription. Mr. Alley says Durant never spent the money he alleges he did and that what he did spend in Washington was paid to him by *U.P.* Eastern Division. Hazard has put an injunction on the stock and on trustees; that 500% in profits has been paid on the Credit Mobilier stock so far and that they are entitled to two dividends of \$10,000 each in securities and one of \$15,000 up to August 1st. Mr. Snyder told me he would leave as soon as he opened the road to Bryan, that he would not stand the fight and be crippled any longer; that he owed over \$1,000,000; that the road was not paying its way and the contractors not paying for hauling; that he did not think the road would pay when finished; that he is spending large sums for new machinery, shops, etc and that coal could be laid on the cars for \$2.50 per ton.

On October 20, Mr. Oliver Ames wrote me as follows:

Nov. Easton
"Your several letters in regard to line have been received, and we think they fully show the superiority of your line. I hear nothing from Dr. Durant about line since he last went out and suppose that everything is satisfactory. Seymour will, of course, do everything in his power to depreciate the line, but I think the Dr. will not attempt any change unless there is a clear case of error."

I hope you will be able to so present the line to commissioners that you have located west of Salt Lake as to insure its adoption. It is very important to us to have this line far enough west to take in the Oregon branch. With Blickensderfer on the Commission, who has a thorough knowledge of the lines run, there will be but little doubt of the adoption of your line. Barnes seems quite favorable to our road, and Dr. Chaffee I think is to be Secretary of the Commission and will do what he can to make a satisfactory report. We cannot over-estimate the value of a right decision on the road west of Salt Lake. You will have the with you a number of days and can show them your superior line and they must come to the conclusion that our line is the best and adopt it. It is important also that the Commission make an early report.

Our bonds are being withheld for the report of this commission and we need them for the work on the road and are now raising all the money being used from private sources which can't hold out long."

On the same date, I received the following letter from Mr.

Jesse L. Williams:

New York

"In passing over the U.P.R.R. as I presume you will with the Commissioners, I respectfully ask you to note carefully any changes in location or grade from your final location, and inform me what and where these changes are. I am apprehensive that without any formal and reported changes the constructing engineers in the hard cuts will quietly change the grade so as to increase it above the maximum on that particular division of road. In returning from Salt Lake, I found that the grade on the summit west of Twin Lakes had been increased to 62 feet with some changes at other points. So at Rattlesnake Summit the grade had been made 66 instead of 65 ft.

The Secretary has given me an unpleasant duty here in reporting on cost of road, its indebtedness, list of stockholders, dividend &c. I shall not have much hearty aid from Brooks, and I have no other calling that amounts to a row of pins.

I hope you and the Commissioners will have a pleasant trip. I shall be home in ten days. I wrote by Mr. Barnes and also sent to Omaha a copy of report of my trip."

On October 23rd, I went to Omaha and met Gen. Barnes and received his instructions. They are pretty strong, but do not think we will have any difficulty in complying with them. I had a long talk with Hoxie who said he would leave the line if Snyder did; that McCullum reported against the management of the road, condition of cars, lack of fuel, etc. They were greatly troubled in New York because the Government was holding up the bonds on the accepted road until the new commission reported and on ¹⁸⁶⁸ Oct 24th Mr. Ames wrote me as follows:

North Easton

"Your favor of 19th inst. is received. I am glad that you are on hand to escort Barnes out. We did what we could here to impress him favorably in regard to the road, and I feel sure that you can satisfy him that everything on the road has been done fully up to the generality of new roads. Barnes says he does not expect or desire that we should take out the trestle work we have until it becomes unsafe, but it may be proper to lay aside a sum sufficient to make the culverts and piers of bridges of stone, and generally to make it a first class road as rapidly as the decay of our wood work requires."

We are really now needing our bonds, and as we have now 80 miles of road done on which we have received no bonds, nor can we issue our 1st mortgage bonds until we received the Govt., it virtually kdeps \$5,000,000 out of us which we have to raise in the market to keep the road moving along. We ought to get the report of this commission at a very early day, and I think they will have no disposition to keep back their report. Dr. Chaffee, who goes out with Gen. Barnes, said to me that he supposed they would want a Secretary to make up their reports, that he would be with them and would offer to fill the position, and his compensation will be the same as the Commissioners. He will make the report as favorable as the Commissioners allow, and will have it promptly executed. I hope we shall be able to get it in before Govt Commissioners get in theirs.

Credit M.
White is removed and Wendell is appointed in his place and left for New York today. I understand he is on to squeeze us and will do everything in his power to force us to pay him smart money. Brooks and Rollins say he is an accomplished scamp, and we can't be too cautious in our dealings with him. I understand he proposes to examine as much of the road as possible and then delay the report on various pretexts to bring us so short of money that we will come down in a very liberal sum to have the report put in so we can get our bonds. 100 miles of road which we shall probably have done before their report is in would give us \$3,200,000 in each class of bonds, \$6,400,000 altogether. The interest on the Government will be \$500 per day, which will be quite an inducement, if money should be tight (which it now looks like) for us to compromise for the report. He thinks that I don't know that this is so; but we have heard that he proposes this, and his reputation is not above a resort to the basest practices for money.

The Commissioners sent out to examine the road are gentlemen of high character and we may expect justice at their hands. If we get in their report early I don't see what excuse Blair's Commission can have for delaying theirs and we can call for a prompt return of their report.

You say that the Doctor made a proposition to C.P.R.R. to agree upon line of grading from Weber to Humboldt, and they agreed to meet Doctor if he desired. If this Commission have this power it will be better to have them exercise it and decide soon which line shall be adopted. Blickensderfer must know exactly the best line and has all the information necessary, and his opinion will, I have no doubt, be entirely concurred in by the other commissioners. If the Dr. has met the C.P.R. and fixed I suppose they will concur, unless Blickensderfer shall feel that the best line is not agreed on.

We have had a meeting of Bridge Committee and they are now negotiating with the other companies on the proportion they will take in the bridge. We have not yet agreed on the price to be paid or approaches to bridge. Expect to be out after election to decide on approaches."

Not
This change which Mr. Ames speaks of in the Commission for the examination of the completed road, of Wendell in place of Dr. White was made, as Mr. Ames suggested, to squeeze the company, as will be shown hereafter.

On ~~Oct~~¹⁸⁶⁸ 25th I started West to examine the road with the Commission.

On ~~Oct~~ 26th, a passenger train west of North Platte was thrown off of the track by a cow, which delayed us four hours.

On ~~Oct~~ 27th we reached Granger and lay there all day the 28th.

On ~~Oct~~ 29th the commissioners were considering the question of

location West and decided the line was on the most practical route.

Oct. 1868
On the 29th I received the following from Mr. Tapley, who was my local agent at Cheyenn², in charge of the town lots. This letter shows the difficulty of satisfying everyone in relation to the sale. It was the policy of the company to give lots to any person whom they thought would be influential in their interest. There was no title to these lots, except the contract which we gave as the land was claimed by the company. When ~~we~~ laid out towns ~~we~~ hoped they would fall on the odd sections and belong to the Company, but laws were afterwards passed which validated these claims and made the title to the people good; The letter is as follows:

Cheyenne

"Your letter 23rd inst. this day received. I am pleased to hear you have contracted the building of a good hotel at this point, for it is one of the institutions we are sadly in need of, and it will pay largely for the amount invested.

Your friends you speak of did not get up this far, they only came as far as the end of the track, as the weather was very bad. I would have been glad to show them Cheyenne and give them any information for you, and am satisfied I could have made everything satisfactory.

Seymour has been down, directly after your leaving, and was very reserved. He appeared a little independent and asked no questions at first, and as a matter of course I volunteered him no service; however, he finally came around and made inquiries as to the disposition of his lots, and I explained as you directed "all not taken on your order" were thrown in market and exposed for sale. He was a little huffy, as he said he took only enough to make him whole on the original reserve for him. I counted him 97 lots that he had placed to his name. He was a little abusive, said he had a crow to pick with you &c. but said he would not say to me his annoyances with you. Your opinion of him when here you need not change I think. He sold the lots you reserved for him in 390 for \$1000 bonus and before he had recounted the money the purchaser realized \$1,400 over the amount paid Seymour, and he did not rest well that night I know. He complained very bitterly of me for not even advising him, as he was not aware of the value of property in that vicinity.

Any friends you have who desire to dispose of any of their lots purchased at Omaha, if you send me a list and the price, terms, &c. complete I will be pleased to serve them, and any further business you desire attention turn into my hands and I will promptly attend to it. Lots in 394 are good and perhaps if offered for sale would go readily. In 358 they are not so suitable for business locations. Sales are very slow and will be I think until the road reaches here, when people will come in rapidly. Lots in 394 ought to bring \$500 to \$800 bonus, the buyer assuming the remaining payments. In 358, no particular sale only for residences. We have been troubled within the last few days with jumpers led by one Haskell formerly justice of peace at Omaha. They held several meetings and adopted resolutions embracing the R.R.Co. have no authority to sell and transfer any property in Cheyenne. The reasons are, the road has not reached and been received as far as Cheyene, that it is not on a section of land that will fall to them by survey as submitted, &c. I took no

action until they had gone their full length and arrived on our lots in large numbers, then I made application to Stevenson as the Agent of the Company, requesting his assistance in protecting the property for the Company. 300 troops were sent and I pointed out the houses, &c. on our lots and they were all removed without any resistance. The parties causing trouble are from Julesburg and the troops had orders to use them roughly if any resistance was offered, and they came prepared to do it. They held a meeting and abused Stevenson terribly, and they will receive no mercy at his hands if he starts for them. They threatened the destruction of his property here in the town, but he had a good plan laid for them. He has left 100 well armed men here and on notice can send 500 more for the security of his property. I sent you a message which he desired to be forwarded. I think Stevenson has his Irish up and if anything farther is attempted he will make a short work of them. He has been here today and desires me to be sure and say to you that he has some bad enemies here and they are men sent here by the Government, and that they are men who work against the interests of the town and make dissatisfaction, and that they are disposed to his course and send all kinds of reports to Washington against him, as for instance the U.S. Commissioner; he is getting up a report saying Stevenson uses Government transportation for use of his officers and men &c. Of course he does not fear the result, but wants you to write to Washington setting forth the facts as they really exist.

We are all satisfied here in the office that the very men who claim to be the favored men of the R.R. Company (Brown and O'Brien) are actually encouraging and aiding parties to squat on our property. Brown returned here some time ago, and he was notified to come forward and pay for his lots, if not they would be sold. He lied to me and I was satisfied of it. He said he had a big coal contract with the Company and that Mr. House had written and telegraphed me to give him all the time he wanted on his lots. I asked House by telegraph if it was so. He said he had made no such arrangements and that he had no contract to his knowledge. He talked of me and the way I run Cheyenne when in Omaha and I told him today his case would be an example for his own information whether affairs were conducted as they had directed and furnished him copy of Mr. House's telegram and stated I could not in any case vary in the least from the established rules.

We had near \$100,000 worth of goods on the cars shipped from St. Louis as far as Julesburg, and Snyder for some reason not known to us turned them off the cars into the Nye Forwarding Co. to be hauled by teams to Cheyenne when they were daily sending goods within 20 miles of here, thereby involving an unnecessary expense of some \$5000 freight bills. Mr. Redd was vexed and did everything he could to send them by rail, but Snyder would not listen to it and turned them off. I was obliged to pay so I could receive the goods, but did it under protest that I can recover damages.

Mr. Shotwell was here few days ago and presented sight draft on me from Mr. House for some \$1300 of the company funds, which I paid and will forward the check.

Trust I will hear from you at an early date or at your convenience, and hope you will favorably consider my last letter."

The commissioners lay at Granger on Oct. 30th and on Oct 31st started to examine the completed road eastward. On November 1st they lay at the Point of Rocks.

On November 2nd, we ran to Laramie, commissioners examining the line carefully. Location west of Red Desert going down Bitter

Creek summit bad location. Changed curvature on O'Neil's line; change ought to be lightened in several places. Location just west of Rawlins Springs has been changed and bad. The location from Medicine Bow to Lookout Station by O'Neil, was bad. It was ordered by Seymour. Twenty miles of distance was added to my original line ^{from} Cooper Lake, ^{west} and a good deal of curvature which O'Neil put in could have been thrown out and lightened and more work taken. Mr. Blickensderfer presented to the Commission the original located line. The Commission were disposed to blame me for this change or criticize my action in relation to it. I presented to them my report on the two lines showing that I recommended very strongly the Brown line as against the O'Neil line, but that the contractors took the matter before the Board of Directors and claimed that it would delay the track laying three months to put in the Brown line where the work was heavy and the grades were 60 feet. On the O'Neil line the grades were lower and the work lighter and it was under these statements that the Board of Directors finally adopted the O'Neil line. I was away and did not know of it until the line was nearly graded, but I showed the Commission that in time, if it was thought necessary, that the original line could be built, which in fact, it has been since by the company and that I thought the decision was based on the question of time. The Commission, though, seemed to think that the company could have built the original line as they were getting \$48,000 a mile for it and did not seem to be satisfied. What report that would make on it, I have no idea.

On Nov. 4, ¹⁸⁶⁸ we ran to Lodge Pole by noon. The Indians burned the bridge 90 miles ^{east} of Lodge Pole and tried to burn the trains. It is evidently bands going north with the intention of getting away from troops in the south. The location at Julesburg looked bad to me. It seemed to me a tangent could be run from the cut bluff to the curve west of Julesburg, but the commission made no criticism of it.

On ^{Nov} the 5th, ¹⁸⁶⁸ the Commission examined all the new stone culverts which were considered very good for the kind of stone used. I noticed the iron bridge over the river had no provision for

The location on east slope of Black Hills was criticized. expansion. We arrived in Omaha at 9 P. M. and I spent the night with Mr. Hoxie.

¹⁸⁶⁸
Up to Nov. 10th, I was with the Commissioners answering their questions and gave them estimates on the cost of bridges and shops west. Mr. Barnes went home sick without signing the report. General Warren and Blickensderfer were giving location their attention; also ballast, equipment and snow fences. Mr. J. F. McCabe, whom I had set to work before I left Salt Lake connecting our located line with the section corners, wrote me from Salt Lake that he was having a great deal of trouble in running up the section lines and informed me that the present U.S. Surveyor General of the territory told him from what he could learn the surveys were originally made very roughly and that he had been told that a good deal of the land was never surveyed except in the office.

¹⁸⁶⁸
On Nov. 11th I received a letter from Mr. Ames saying that they were anxious to get over the road and to see the location of the Missouri River Bridge and work commenced. He said: "You will decide the question of location, as chief engineer of the company, and that Mr. Dillon, Duff and himself hoped to leave the first of next week for Omaha and examine fully the bridge matter on the ground and urged me to get a report as soon as possible from the Commissioners."

I received a letter from Gen. J. A. Williamson who had charge of the towns west of the Green River that he had just returned from the Bear River to Evanston by way of Carter, the town which Mr. Durant had ordered Mr. O'Neil to lay out north of Bridger. He did not think there would be any demand for lots at Carter, but that there would be at Evanston.

I had determined to make Evanston a division point. Evanston was 10 miles from the stage road and there was no road nearer than that distance. The crowd that was at Green River City had moved to Evanston and bringing the same influence to bear at Evanston that they did at that place.

¹⁸⁶⁸
On Nov. 20th, I called Blickensderfer and showed him Morris' estimate on Promontory and he thought the 90 ft. grade should be adopted. I was anxious to get the opinion of the commissioners on

The changes from Evans line made by Seymour were condemned but as the grade had been maintained, they made no change.

Mals.
→

this grade because it was parallel to that of the Central Pacific.

Nov. 1868
On the 20th I received the following letter from Mr. McCabe:

Ogden, Utah
"I have been running from a point said to be a section corner. The difficulty is that I can find no other corners which is necessary in retracing U.S. surveys. Could do no better if I started in Salt Lake City; territorial surveyor never paid any attention to U.S. survey and territorial surveyor General acknowledges to us surveyors that if called on to locate a piece of ground in reference to section and township could not do it. Party is idle. It is useless for me to try longer to retrace U.S. Lines."

Nov.
On the 20th I also received a letter from Mr. Oliver Ames stating they wanted a map of the eleventh one hundred miles filed as the Commission declined to examine the 46th section to 920 miles because the tenth one hundred miles was not in. I had already filed a map of the tenth one hundred miles but I immediately filed another.

On Nov. 25th I wired W. F. McCabe who was still working on the section lines to start from the Temple block Salt Lake. If you can do no better, rather have it certain than any doubts. You can run a line rapidly north until you reach U.S. line. Try to get same variation of needle as on our section lines.

On Nov. 27th Mr. Duff and Dillon and I went to Omaha to meet the citizens and agree upon the right of way from the River west, for the bridge.

On Nov. 28th still in consultation with the citizens. Mr. Edward Creighton told Duff and Dillon that the two months Durant was in the mountains he cost the company \$250,000, and Mr. Evans, who came in, said there was no telling how much he had cost them. While Mr. Durant was in the West, he left to Mr. James A. Evans, who had finished his work as Superintendent of Construction to Green River, the contract to build all the Howe Truss Bridges west of Green River. This interfered with the Boomer contract and was very liable to give the company trouble, but it was let at a much less price because Evans could get out all the short timbers for the trusses in the West and save the cost of transportation, but I had no doubt they would have to pay Boomer as much as the difference for his claim. When Evans took the contract, he did not know Boomer had a contract which he could construe as covering that territory.

1868
On December 1st I received a letter from Mr. Blickensderfer who was then examining the Kansas Pacific Branch of the Union Pacific,

as follows:-

Lawrence, Kansas

"According to your request I write you, but I have not been able to learn anything definite on the subject you desired me to write about, viz; the Indians. It is said Sheridan is after them with a large force concentrating upon them from four or five different directions. They are south on the head of Arkansas or Canadian whither his forces are moving with the intention of striking their lodges.

No difficulty has been experienced on this road recently, although they will not run trains in the night west of Ellsworth. When we were out west on Friday and Saturday last it was said a small party of some 20 Indians had been seen crossing the track day before going north. The fear is expressed that the Indians will scatter in small parties and thus evade Sheridan, but it seems to me scarcely possible that the women and children of the lodges will entirely escape him, and the warriors will hardly abandon their families altogether. It is said troops have moved from the end of the track, from Topeka, from Santa Fe and from Texas, as well as perhaps from some other points; but of this you can ascertain as well in Washington as from here.

We have been over this road and are now preparing our report. I can only say now that this line is not either so well located or so well built except in its truss bridges which are stronger than yours. Confidentially, I will say it is a shame that such very poor work as this is was ever accepted by Govt. Commissioners, and you need have no fears of my or any full comparison between this line and yours which will or may ever be made. More hereafter.

When at Wyandotte, Gen. Warren and I paid a visit to the Kansas City bridge. They are working vigorously at the foundations and I assure you have no small job before them. Their works are interesting and Mr. Chanute seems a very energetic thorough man. Three piers are up and the foundations of the remaining three in full progress.

We hope to get away from here this week yet."

On December 1st ¹⁸⁶⁸ I started for Washington with Messrs. Duff, Dillon, Boomer and William Sooy Smith, Supt. of the Missouri River Bridge building, on the cars.

On December 2nd, Mr. Reed wired Mr. Snyder that they would need 100,000 ties West of Bear River crossing. He said, "It is rather rich after the assurance that we would have surplus ties West of Bear River. His order will require haul of ties average distance of four hundred miles. The track had been delayed the last four days from the non completion of grading and bridging. Fifteen miles of iron at end of track ready for Casement."

^{Dec.} On the 5th Mr. House submitted the maps and profiles to the 940 miles post and also those to the 960 miles post for the commissioners to examine.

^{Dec.} On the 4th Mr. Evans wired that they had 80 miles graded ahead of the track; cost of shops at Rawlins was \$100,000 and the telegraph was completed 50 miles ahead of the track.

^{Dec.} On the 4th Mr. Evans wired that the track was at the 955 mile

post and weather good; every indication that they would be able to get over the head of Echo before snow.

On Saturday the 5th of ~~De~~cember, 1868, I reached New York and had a meeting with the Board of Directors. Messrs. Durant and Seymour were in the West, Ames, Duff and the balance in New York.

The commissioners made and filed their report with the Secretary of the Interior and it will be found in the 40th Congress 4th Session House of Representatives, and in my reports.

It was very favorable to the Union Pacific. In making comparison of the Union Pacific and Central Pacific Locations it was in favor of the Union Pacific in every point, lines and work, and the report was a great compliment to the Union Pacific Engineers.

In 1865, the Congress of the United States, passed an act ^c amending the Union Pacific ^a at, a section of which is as follows: ✓

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section ten of said act of July second, eighteen hundred and sixty-four, be so modified and amended as to allow the Central Pacific railroad company and the Western Pacific Railroad company, of California, the Union Pacific Railroad Company, the Union Pacific railroad company, eastern division, and all other companies provided for in the said act of the second of July, eighteen hundred and sixty-four, to issue their six per centum thirty years' bonds, interest payable in any lawful money of the United States, upon their separate roads. And the said companies are hereby authorized to issue, respectively, their bonds to the extent of one hundred miles in advance of a continuous completed line of construction."

Notes
Taking advantage of this section the Central Pacific railway company formed a very ingenious plan of filing their line as far East as possible and getting it approved by the Interior Department. They claimed to have made their first reconnoissance in 1867 for the line they filed October 14, 1868, from the following letter of Mr. C. P. Huntington:

New York, Office of C.P.R.R.,
October 14, 1868.

Hon. O. H. Browning,
Sec. of Interior, Washington, D.C.

"I have the honor to hand you herewith map and two profiles of the line of the Central Pacific railroad of California between Monument Point (north end of Salt Lake) and Echo summit (head of Echo canon). a copy of the report of chief engineer S. S. Montague, dated July 17, 1868, on the same; a copy of the minutes of the Board of Directors of the company adopting the report; and the reports of the consulting engineer, Geo. E. Gray, June 20 and July 17, 1868, confirming the above.

From these thorough and minute surveys we are convinced that the above-mentioned line is the very best possible one that can be obtained between the points mentioned and we respectfully submit the same to you and ask your approval of it.

The railroad track is now laid to Reese River only one hundred and twenty-nine miles from Humboldt Wells, which is but one hundred and forty-two miles from Monument Point, at the north end of Salt Lake; and as the company have one hundred miles of road graded and ready for the rails, which they are laying at the rate of three miles per day, and men at work grading on all the heavy work between the end of completed road and the north end of Salt Lake, I think it quite safe to say that the Central Pacific Railroad will be in operation from the tide water of the Pacific to Salt Lake within eighty days from this date; and if the Hon. Secretary will approve the location as per maps here presented, so that the company can get men and material on the heavy work before winter sets in (which, if done this season, must be done soon) the road will be completed to Echo summit by the first of next June and the whole line between San Francisco and Omaha by the first of September, 1869; but this would require working three sets of hands in the tunnel, working day and night."

142
70
212

36
3
108

3 1/2
72

On october 20th, 1868, this map was accepted by O. H. Browning, the Secretary of the Interior, and he wrote the following letter:

C. P. Hungtindon,
W.P.C.P.R.R. of Cal.,
New York.

Department of the Interior,
Washington, D.C. October 20, 1868.

I have received your letter of the 14th instant and accompanying map and profiles of the line of the Central Pacific Railroad of California, from Monumental Point (north end of Salt Lake) to Echo Summit (head of Echo canon); also, reports of chief engineer and consulting engineer on same, with a copy of the minutes of the Board of Directors of the company adopting and approving of the location of the line of road between those points.

In view of the 2nd section of the act of Congress, approved July 3, 1866, I hereby give my consent and approval to the location of said road according to the map and profiles mentioned.

Very respectfully, your obt. servant."

The Central Pacific Company had never run anything but a preliminary line to the head of Echo, This was run by Mr. Ives in 1868, stakes were stuck 500 feet apart and Ives on reporting shows it was only a preliminary line. It had at the head of Echo a tunnel of 2500 feet.

When the Central Pacific people discovered that we were liable to reach Ogden long before they did, in the fall of 1868, they took this preliminary line of Ives and, in the office, put in the curves and topography so as to make it a located line, and this was the line they filed. It was impossible to locate the line upon the ground as located in the map and the whole thing was a violation of the law in relation to the filing of lines. It was a combination of the Central Pacific with the Administration for the purpose, as will appear further on, for obtaining bonds on the above section of country. As soon as the Union Pacific heard of this, they entered a protest. The Central Pacific charges were that we were building a road very fast with temporary work, with the intention of covering ground ahead of our completed line. To meet this question of whether our line was temporary or permanent, on October 9th, a special commission was appointed by the Secretary of the Interior to examine the road from Omaha to the end of the track to make a full report on its, location, equipment, etc. and the amount of expenditure required to make it equal to a completed first-class road. On the interval between the end of the track and Weber canon they were to report the most direct, central and practical location; the interval between the

head of Weber canon and Salt Lake they were to report the most direct, central and practical location; and the estimated cost of the construction and full equipment. The report of this commission is found in the 40th Congress, 4th session, House of Representatives Ex. Doc. 15.

On November 23rd, the Commission made their report. It is a long report and I only quote from it sections which are applicable to the case, they dividing their report;

First, a general review of the natural features of the line from Omaha to the head of the great Salt Lake with regard to the most direct, central and practical location.

Second, a review of the road and telegraph line. Construction between Omaha and the West end of the track, with estimates of the additional out-lay required to complete its construction and full equipment.

Third, an estimate of the cost of construction and full equipment of the road from Weber Canon to the head of great Salt Lake.

Their report upon the first of these divisions was as follows:

"The foregoing shows that the location of the Union Pacific Railroad is in accordance with the law as a whole and in its different parts, the most direct, central and practicable that could be found between Omaha and the head of great Salt Lake.

On the second, details of location:

In considering more minutely the points to which by your instructions our attention has been directed, and in regard to which we are specially required to report, the location in its details naturally presents itself first. Although generally the line is well adapted to the ground, there are points where the full capabilities of the country have not been developed, and others where, in its details the location is radically wrong. Cases of this kind occur on the slopes of the Black Hills, in the vicinity of Hazard, Granite canon, Dale Creek Bridge and Red Butte station, also on Rock Creek and near Red Desert station, and on Black's Fork.

In a majority of these cases the prevailing idea seems to have been to diminish the cost of the work by the introduction of a greater number and sharper curves than the circumstances required, the saving in cost having been very small in comparison with the permanent injury to the road. In some other instances no very clear motive for the course taken presents itself. We are advised that among these cases are somewhere, in the construction of the road, the location as made by the chief engineer was disregarded. In view of the rapid prosecution of the work this may have been admissible, but cannot justify a permanent adoption of the line as built. True economy and the best interests of the road require alterations and improvements to be made in the line in all these cases, and the probable cost thereof has therefore been estimated."

On the 3rd point they made the following report:-

"In estimating the expenditure which will be required in order that the road, so far as built, may be rendered equal to a fully completed first class railroad, we have considered each class of work required in as much detail as circumstances and the desire expressed in our instructions that our report be made with the least practicable delay, would allow, and in deciding on the probable amounts required, we have been governed by the results of our own observations, taken in connection with data obtained from the profiles, maps and other sources, of information derived from the company. The estimate is as follows:

Changing locations to improve line and diminish curvation at Black's Fork, Red Desert, Rawlins, Rock Creek, Red Buttes, Dale creek, Granite canon and Hazard, not including cutting off large bends on Rock Creek - - - - -	\$200,000
Completing embankments to full width, filling trestle-works (6 1/2 miles) and riprapping - - - - -	240,000
Completing excavation of cuts to grade out Black's Fork, Bitter Creek, &c., &c., - - - - -	20,000
Reducing grades between Omaha and Elkhorn, to conform with condition on which change of line was approved	245,000
525,000 cross-ties, to replace those of cottonwood timber, including transportation, removal of old ties and placing new in track, at \$1 - - - - -	525,000
Ballasting, including transportation, lifting track, placing material, surfacing and readjusting track, and curving rails, 890 miles - - - - -	910,000.
70 abutment and 26 pier foundations, including excavating, piles, grillage, and securing with riprap, at \$1,500 - - - - -	144,000.
30,480 yards masonry in abutments and piers, at \$15	457,200
8,450 lineal feet Howe truss, viz., 49 spans of 150 feet, and 11 spans of 100 feet, at \$45 - - - - -	380,250.
Supplying 121 openings of trestle-work of 50 feet length and under, between Omaha and North Platte, with permanent works of masonry and girders, at \$500 - - - - -	60,500.
Supplying 254 openings of trestle-work of 50 feet length and under, between North Platte and end of track, with permanent works of masonry and girders, at \$900 - - - - -	228,600.
Supplying 184 openings of trestle-work averaging 103 feet each, with permanent structures of masonry and girders or short trusses, including foundations at \$1,500 - - - - -	276,000
Renewing Dale Creek bridge or replacing same by embankment and arched water-way - - - - -	100,000.
Probable expenditure for additional water-ways in Mary's Creek, Bitter creek and other points not provided for, and renewing and enlarging stone culverts - - - - -	100,000
60 new passenger locomotives for through travel on opening of road, at \$14,000 - - - - -	840,000.
Thorough repair, say of one-third of locomotives, used in construction and on hand when road is opened, say 50 at \$3,000 each - - - - -	150,000.
44 new passenger cars, for through travel on opening of road, at \$6,000 - - - - -	264,000.
30 Baggage, express and mail cars, at \$3,800 - - - - -	114,000
500 box freight cars at \$900 - - - - -	450,000
50 additional locomotive stalls, at \$4,000 - - - - -	200,000
Competing shops at Cheyenne, additional shops at Bryan, and enlarging shops at Omaha, with tools for Cheyenne Rawlins and Bryan - - - - -	350,000
Additional water stations and probable additional expenditure to secure full supply of water between Rawlins and Bitter Creek - - - - -	80,000
Additional station buildings - - - - -	75,000
Additional snow fences 0 - - - - -	50,000
Additional fencing against stock - - - - -	30,000
Total - - - - -	6,489,550

3 575,550
10,005,100

The foregoing estimate is confined to the 890 miles of road from Omaha to the end of the track, and is a statement of the expenditure deemed necessary to complete the construction and equipment of that part of the road ready for the traffic to be thrown upon it when the line is opened to California. It is based on the road and equipment as we found them, and no allowance is made for works in progress, or for materials and equipments ordered or reported in transitu for delivery or already delivered, except so far as already placed in position in the structures themselves.

The estimate being made with reference to the 890 miles only, it does not, of course, afford any criterion of what may or may not be required on that part of the line extending from the end of the track to Weber Canon, on which we understand our instructions as not requiring an estimate of any kind.

III. An estimate of cost of construction and fully equipping the road from Weber Canon to the head of Great Salt Lake.

The estimated amount required for the construction and full equipment of the road from the mouth of Weber canon to the head of Great Salt Lake, is as follows:

For grading and bridging, including masonry and foundations complete, 96.3 miles, at \$11,500 per mile	\$1,107,450.
Superstructure, including rails, fastenings, spikes, ties, track-laying and ballasting, with six per cent of sidings, 102 miles, at \$17,000 per mile - - - - -	1,734,000.
Equipment, including motive power, rolling stock, engine houses, turn-tables, shops, tools, water stations and station buildings, 96.3 miles at \$7,000 per mile	674,100
Total	<u>3,515,550.</u>

Taken as a whole the Union Pacific Railroad has been well constructed. The general route for the line is exceedingly well selected, crossing the Rocky Mountain ranges at some of the most favorable passes on the continent and possessing capabilities for each grade and favorable alignments unsurpassed by any other railway line on similarly elevated grounds. The energy and perseverance with which the work has been urged forward, and the rapidity with which it has been executed, are without parallel in history. In the grandeur and magnitude of the undertaking, it has never been equalled, and no other line compares with this in the arid and barren character of the country, it traverses, giving rise to unusual inconveniences and difficulties, and imposing the necessity of obtaining almost every requisite of material of labor and of supplies for its construction, from the extreme initial point of its commencement.

Deficiencies exist, but they are almost without exception, those incident to all new roads, or of a character growing out of the peculiar difficulties encountered, or inseparably connected with the unexampled progress of the work, a matter of the greatest importance and highly creditable to the able managers of the company; and they can all be supplied at any outlay but little exceeding that which would have obviated them in the first instance, but at the cost of materially retarding the progress of the work. Under the circumstances it is much more a matter of surprise that so few mistakes were made and so few defects exist, than it would be had serious deficiencies been of more frequent occurrence; and the country has reason to congratulate itself that this great work of national importance is so rapidly approaching completion under such favorable auspices.

G. K. Warren, Bvt. Maj. Gen. U. S. A.
J. Blickensderfer Jr., Civil Engr.
James Barnes, Civil Engineer."

1868
On October 29th, Mr. T. C. Durant, the Vice President of the Union Pacific Railroad Company, filed the following protest against the appointment of Mr. Blickensderfer:

End of U.P.R.R.Track, Oct. 29, 1868.

To the President,
Washington.

One of the commissioners appointed to re-examine the Union Pacific Railroad, now completed, and also to examine the location of the line west thereof, has been for some time in the employ of this company as Civil Engineer, and located that portion of the line above referred to. I would, therefore, most respectfully suggest, that the Commission be composed entirely of disinterested persons, believing their decision will be more satisfactory to the Government, the stock-holders and the public, and relieve all parties from unfriendly criticism."

The raising of our grades and the comments he had made, had given the ammunition to the Central Pacific for its attacks upon our location, and Mr. Durant began to see the fruits of his efforts.

On January 25th, 1869, the Secretary of the Interior appointed a Commission to examine the Central Pacific railroad. This commission, composed of Sherman Day, R. S. Williamson, and Lloyd Tevis, found that it was necessary to have \$310,000 to complete the Central Pacific. It was a white-washing report. As soon as I found they were to make a comparison of the two roads, I immediately appealed to the Secretary of the Interior by the following letter,

January '11, 1869.

Hon. O. H. Browning,
Secretary of the Interior:
My dear Sir:

If there is to be a comparison of the two roads made, I suggest that the same commission examine both roads--not have two separate commissions, as then no accurate comparison would be made. It is simply justice to both companies that this be done.

Respectfully,
G. M. Dodge,
Chief Engineer.

In response to that appeal, Mr. Browning on January 14th appointed Major General C. K. Warren and J. Blickensderfer of the Commission which examined the Union Pacific and added Lt. Col. R. S. Williamson, U.S.A. who was on the Central Pacific commission and L.M. Clements, a civil engineer in the employ of the Central Pacific.

They made their report on May 14, 1869 to J. D. Cox, the then Secretary of the Interior.

The instructions of this committee were as follows ;

Washington, D. C. Jan. 14, 1869.

"The acts of Congress providing for the construction of the railroad between Omaha and Sacramento require its location upon the most direct, central and practicable route.

The approaching completion of this national thoroughfare and the disagreement of the companies engaged in its construction touching the best route between the completed portions of their respective roads, require, in the opinion of the President, the authoritative adoption of a route located as directed by law, and to which both companies should conform. For the purpose of examining and reporting upon this and other matters, you have, by this order, been appointed special commissioners to act under the instructions of the Secretary of the Interior.

"You will, therefore, meet on the 25th instant, at Great Salt Lake City. After repairing to the western terminus of the completed track of the Union Pacific Railroad Company, you will proceed to make a careful and thorough examination of the ground situated between it and the completed track of the road of the Central Pacific Railroad Company of California. If either of the existing routes between those termini is in all respects unobjectionable, you are at liberty to adopt it. If not you will make a new location. In either case in order that the department may act advisedly in the premises, you will report to me, specifically, as well the facts elicited by your examinations as the reasons which have governed your conclusions, and transmit an accurate map and profile of the route which you determine to be the most advantageous.

You will also designate a point at which the two roads will probably meet in the construction of a completed line.

The companies will furnish you with the maps and profiles, prepared by their surveying parties and engineers. It may not be indispensable for you to extend your surveys over the entire ground above referred to. You should at all events, thoroughly test the accuracy of the companies maps and profiles, and be in possession of all the facts which will enable you to determine the question touching the said route.

After completing your investigations, and reporting to this department thereon, you will forthwith repair to Sacramento, California, and proceed to make an examination of said roads. In performing this duty, and submitting a report, touching their location, construction and equipment, and the expenditure necessary to bring them up to the required standard of a fully completed first-class road, you will, as far as they are applicable, be governed by the instructions of this department bearing date respectively the 9th and 15th days of October last past, a copy of which is herewith transmitted.

Your per diem and mileage will be at the rates mentioned in those instructions to be paid by the companies in such proportion as this department shall determine.

I am, very respectfully, your obedient servant,

J. D. Cox, Sec. of Interior"

Their first examination was on the disputed territory between Ogden and Toans Pass, over which both lines were building and after a detailed comparison of the two lines they make the following report:

"Comparing these quantities, it will be seen that the line of the Central Pacific is longer by 7865 feet. The total of its ascents is greater by 120 feet. Its descents are greater by 118 ft. The sum of its deflections is greater by 237°. The less radius of curvature is shorter by 954 feet and its maximum grades, both going West and East are in excess of those on the line of the ^{Union} Pacific Company. We, therefore, submit to the Department that the line located by the Union Pacific Company between Ogden and Toans summit, and which is represented in detail on the map and profile herewith transmitted, is the line which all things considered is entitled to the preference between those points."

On the 2nd question, the examination of the Central Pacific Railroad on their criticism of its location was as follows:

"Whatever may be said in reference to the general route of the Central Pacific road, (and there is no doubt that it is admirable, with possibly, the single exception of the part across the Sierra Nevada) it is not fortunate in the details of its location, and the advantages afforded by the route have not always been realized. The curvature is excessive and needlessly sharp, and throughout a large portion, the ascents and descents are multiplied over and over without necessity. The tangents are not directed towards the controlling points of the valleys, thus involving a loss of distance, an increase of curvature, and of probable ascents and descents. A proper effort has not been

made to secure low ruling grades, and thereby at once diminish the demand for motive power and cheapen the cost of operating the road. Grades of 70 to 80 feet per mile are often introduced, where one of 53 feet per mile would have been ample, and grades of 53 feet per mile where not more than half that rate of ascent was required. The most striking instance is in the Humboldt valley, between Humboldt Lake and Humboldt Wells, the difference of elevation of which is 1,111 feet, involving in a distance of 290 miles of road, in this most practicable valley, a loss of elevations greater than that of the summit of the Allegheny mountains above the Atlantic seaboard and requiring trains to be hauled up an aggregate of ascents more than equal to that on the principal lines between the eastern coast and the Ohio River Valley. In the Sierra Nevada, likewise, the alignment is more serpentine, the curves are more numerous and of shorter radii than the nature of the country requires, although there is here no loss of elevation, and the gradients could probably not be materially reduced. Between Humboldt Wells and the end of the track, a better curvature location could also have been secured, reducing both the grades and curvature very materially. This is known from an examination of the surveys of the Union Pacific Railroad Company, which extended westward as far as Humboldt Wells. There is no doubt that a careful and judicious location of the line would reduce the length from ten to twenty miles, diminish the sum of its deflections by a very large amount, very much improve the character of the curves, avoid several thousand feet of ascents and descents, and furnish a road which could be operated at a greatly diminished cost. It would materially reduce the time within which trains could pass over the road with safety, permit an increase of from 30 to 50 per cent in the loads which engines could haul over the greater part of the distance, and in every way enhance the commercial value of the road. It may be supposed such a location would involve heavy work and excessive cost. But this is not the case; for an examination of the official profiles will show that in the Humboldt Valley where the greatest changes would occur, the work is exceedingly light. For many miles the average height of embankment does not much exceed twelve inches; the grading of an entirely new line, properly located, without reference to the present, would cost only a very moderate sum, and the total abandonment of the present line wherever necessary, would not occasion a serious loss. Under no circumstances could the work between the east end of the track and Truckee station, comprising four-fifths of the entire line to Sacramento, be considered expensive; certainly not, in comparison with that on eastern roads, where much heavier work is performed to secure smaller advantages. Even in the Sierra Nevada where the work is expensive, many ameliorations can be secured with comparatively small outlays."

In estimating the deficiencies on the Central Pacific Road between Sacramento and its 551 mile post, they reported as follows:

Correcting errors of location, reducing curvature, lengthening radii of curves, reducing grades, and obviating loss of elevations - - - - -	\$1,600,000.
Completing excavations and embankments to full width and increasing height of embankments - - - - -	152,000.
Completing the grading of side tracks - - - - -	14,000.
17,500 additional ties for sidings, including spikes and laying, at \$1 - - - - -	17,500.
5,255 yards bridge masonry, including preparation of foundations and materials therefor, at \$16 - - - - -	84,080.
1,200 lineal feet Howe truss, Sac. & B.C. at \$35 - - - - -	42,000.
Supplying 182 short openings of trestle work in Humboldt valley with permanent works of masonry and girders, \$800 - - - - -	44,800.

Probable expenditure for additional water-ways at points not provided for, and renewing badly-built Culverts - - - - -	\$ 30,000.
504,000 yards embankments, filling trestle works and approaches to bridges, at 40 cts. - - - - -	201,600.
Arching, 1705 lineal feet tunnels, at \$100 - - - - -	170,500.
Ballasting, including transportation, lifting track, placing material, surfacing and re-adjusting Track, and curving rails where necessary, 551 miles	626,800.
Thorough repair of part of locomotives used in construction, on hand when road is opened for through business, say 20, at \$3,000 - - - - -	60,000.
48 new passenger cars for through trade, at \$6,000	288,000.
20 baggage, mail and express cars, \$3,800 - - - - -	76,000.
300 box cars, \$900 - - - - -	270,000.
Transforming 800 platform cars, part of stock on hand, into box cars, at \$150 - - - - -	120,000.
Engine houses, or locomotive stalls, shops and tools, with turn tables at Colfax, Summit, Truckee, Wadsworth, Argenti, and Humboldt Wells, with smaller intermediate engine houses and turn tables	400,000.
Additional water stations and wood and coal houses and enlarging water tanks - - - - -	82,600.
Additional station buildings, section houses and other accommodations for employees - - - - -	137,500.
Total - - - - -	4, 493,380.

The foregoing estimate is confined to the 551 miles of road from Sacramento to the end of the track, and is a statement of the expenditure deemed necessary to complete the construction and equipment of that part of the road ready for the traffic, when the line is opened through to connect with the Union Pacific railroad. It is based on the road and equipments as we found them, and no allowance is made for works in progress or for materials and equipments ordered or reported in transitu for delivery, or already delivered, except so far as already placed in position in the structures themselves. It is believed by us that some of the deficiencies are being supplied by the company as rapidly as practicable.

In considering the location of the Union Pacific between the 890th mile post to end of track, near Ogden, which Central Pacific had filed its line over, the commission reports as follows:

"Between the 890th mile and the end of the track near Ogden, the road is well located. It was observed however, that in several cases the line of the road as constructed varied considerably from the location as made by the chief engineer and as shown on the company's official maps and profiles, copies of which are filed in the department. These cases occur near Evanston, near the mouth of Lost Creek in the vicinity of tunnels numbered 3 and 4, in Round Valley near Peterson's Point, in vicinity of Devil's Gate and between Deseret and Ogden. We were not advised why the road was not built on the located line, and the only apparent reason for deviating from it seems to have been a desire to effect a saving in the cost of construction, a result not always attained, and when accomplished in no instance commensurate with the damage inflicted on the commercial value of the road. In every case shorter radii are used, and there is an increase in distance and curvature with no compensating advantage."

On their estimate on the Union Pacific for deficiencies from Omaha to the 1035 miles, near Ogden they made a total of \$6,771,710 as stated.

In their final report dated Nov. 18, 1888, they comment on the Union Pacific as follows:

Mals
"The \$6,771,710 estimate is confined to the 1,035 miles of road from Omaha to the end of the track and is a statement of the expenditure deemed necessary to complete the construction and equipment of that part of the road ready for the traffic when the line is opened through to connect with the Central Pacific railroad of California. It is based on the road and equipments as we found them, and no allowance is made for works in progress or for materials and equipments ordered or reported in transitu for delivery or already delivered, except so far as already placed in position in the structures themselves.

It is believed by us that some of the deficiencies of the

road are being supplied by the company as rapidly as practicable."

These two reports settled all questions of location and construction of the two roads in favor of the Union Pacific but the question of the acceptance of the line was still undecided.

On August 15, 1858, Mr. Jesse L. Williams reported to the Government Director. Secretary of the Interior on the estimated cost of the Union Pacific Road; as follows:

Ft. Wayne, Ind., Nov. 14, 1868.

The near approach to the meeting of the two Pacific railroad companies, with their respective lines of track, thus opening railroad traffic across the continent, gives importance to every fact bearing upon the success of this great national work. The manner of its construction, the degree of its completeness, and the probable cost as built, are believed to be points of special interest with the department at the present time.

Hitherto, much uncertainty has existed as to the cost of a railroad crossing the western half of the continent. The topographical surveys made by order of Congress in 1854, could, in one season, but partially develop this vast unoccupied region. Its adaptation for railroad construction, and the possibility of avoiding the rugged mountain districts by favorable east and west valleys, could be determined with certainty only by the definite final location. From the progress made in construction, the cost can now be estimated with sufficient certainty for any purposes of the department.

Having, as a member of the locating committee, passed over the line adopted, and having taken some notes during the careful professional examination of the entire work to Salt Lake in July last, under your instructions, it seems proper, under the thirteenth section of the amendment act, to report any facts obtained, throwing light upon this subject. This statement, so far as it bears upon the cost, may furnish the same information, but in different form, with that sought through the government directors by your letter of 7th October last.

It now seems probable that in the division of the work between the two companies, this company will build to some point near the northern extreme of Salt Lake. Assuming the place of meeting to be a little west of Monument Point, supposed to be the best point for the junction of the projected Oregon branch, the total length of line built by the Union Pacific Company will be about 1,100 miles.

The cost of the road as shown on the books of the company, is, of course, equivalent to the contract price per mile, which for the first 900 miles, has heretofore been reported. Whether the last 200 miles has been let to the same contracting company, or is being built directly by the railroad company, I am not informed, but as heretofore built and accepted by the commissioners. But the actual cost to the contracting company, understood to be an association embracing most of the larger stockholders in the railroad company, is shown only by their private books, of which the government directors have no knowledge. In the present unfinished state of the work, even a full statement of the expenditure to date, by the contracting company, would throw little light upon the cost of the entire line. On this point a more satisfactory view can now be presented by an approximate estimate from the most accurate data available. A summary of such estimate for 1,110 miles I herewith submit. It does not include the whole cost as the road should be completed:

ESTIMATE.

Grading and bridging 1,110 miles, including trestle-bridging, also, Howe truss-bridges, and stone culverts so far as built or commenced - -	\$10,981,492.
Iron rails for 1,110 miles, delivered on west side river at Omaha, including six per cent of length in sidings - - - - -	10,972,837.
Spikes, chairs, fish-plates, switches &c. delivered at Omaha for the same length of road - -	1,118,923.
Transportation of iron rails, chairs, spikes, &c from Omaha to the track-laying party, averaging near 550 miles, including hauling out ties from Omaha, Laramie and other points of delivery, with other miscellaneous transportation - - -	2,228,069.
Cross-ties for 1,110 miles, with sidings as above delivered at Omaha, Laramie and other points of distribution, about 3,000,000 in all, of which probably 1,850,000 are mountain pine, 150,000 cedar, 250,000 hard-wood and 800,000 cotton-wood	2,942,500.
Track-laying 1,110 miles, as per contract, including sidings and probable allowance for delays - - - - -	1,160,000.
Equipment on 1,110 miles, including rolling stock shops, stations, &c. estimates at same rate per mile as on first 710 miles - - - - -	-6,438,000.
Add cost of preliminary surveys and final location from 1863 to 1868, inclusive, not including land and two site surveys, probably about - - - - -	750,000.
Add also for engineering and contingencies on construction, general expenses, interest on capital advanced at commencement of the work, &c, say - -	2,000,000.
Telegraph line 1,110 miles, as it is being built	333,000.
Total - - - - -	\$ 38,824,821.

Average per mile, \$34,977.32. Average per mile for 1,110 miles of track-superstructure, including sidings, and a fair proportion of the allowance for contingencies, \$17,000.

The prices fixed are considered a liberal allowance for what has been actually paid to the sub-contractors, and for materials purchased, not covering the second profit which, of course, is due to the intervening contracting company.

The prices affixed are considered a liberal allowance for what has been actually paid to the sub-contractors, and for materials purchased not covering the second profit which, of course, is due to the intervening contracting company.

In this statement of cost, the bridging, equipment and general finish, as I found these items up to August last on the first 710 miles, including shops and station buildings then common, is taken as a basis for the whole line. All permanent bridges and stone culverts, since substituted in place of temporary trestle-work, together with the truss-bridges proposed on the Weber river, are also included.

The degree of confidence to which an estimate of such magnitude is entitled can be better determined by stating its elements. The main items, such as iron, ties, track-laying, &c. being matters of public contract and purchase, can vary but little. These constitute over half the whole estimate. The items less certain are the grading, bridging, trestle work, equipment and general contingencies. Of the sufficiency of these every practical engineer acquainted with the route will form his own opinion. As respects the grading and trestle-work, the engineers who made the final location could, from their notes make a more accurate estimate. The difference, however, could not materially change the general comparison between the actual outlay and means provided.

In the settlement between the board and the contractors, for the first 246 miles, reaching to the 100th meridian, made in December, 1866, the cost of iron rails delivered at Omaha was found to be near \$135 per ton. This is taken as a basis for the first 440 miles, most of which was burdened with the large cost of Missouri river navigation. Iron rails for the last 670 miles have been and are being delivered at Chicago, under public contract as I understand, at an average of

\$83 to \$85 per ton. They are estimated at \$85. Adding railroad freight to the Missouri at two cents per ton per mile, with \$2.50 per ton for transferring across the river, gives for this very large item a reliable standard of \$97.50 per ton at Omaha. Hauling out iron and other materials to the end of track is placed at 2 1/2 cents per ton of 2,000 pounds per mile.

As respects the grading, the two heaviest sections on the work have been carried into the statement at the estimate of the locating engineers, as reported to the company. In all there are nine or ten short sections of heavy grading west of and including the expensive parts of the Black Hills range, amounting to 45 to 50 miles. In most cases this is estimated, not from the engineer notes, but by comparison with other similar work. Intermediate between these points of heavy work, which embraces most of the rock excavations, the grading is generally of the ordinary character, corresponding in amount of material moved with the cheaper roads in the States further East. The very favorable formation in the Platte and Lodge Pole valleys is well known. These divisions are estimated by the mile in comparison with other similar work. The earth on the entire line is generally light and cheaply removed, which, in part, offsets the extra cost of supplies. The undersigned recognize the various and necessarily large expenses of a general and contingent character incurred in conducting an enterprise of such magnitude. For this the allowance of \$2,000,000 would seem to be adequate.

For 1,110 miles of the road the cash value of the government bonds and the company's first mortgage bonds, for which this subsidy forms the basis, may be estimated as follows:

United States bonds, from Omaha to the eastern base of the Rocky Mountains (Black Hills range) as fixed by the president, 526 miles, at \$16,000 -	\$8,416,000.
Ditto thence for 150 miles, at \$48,000 - - - - -	7,200,000.
Ditto for remainder of 1,110 miles, being 434 miles, at \$32,000 - - - - -	13,888,000/
Total U. S. bonds bearing interest at 6% in currency - - - - -	29,504,000.
Average per mile, - - - - -	26,580.

The company, as the road progresses, issues its own first mortgage bonds to the same amount. These 6 per cent 30 year bonds, principal and interest payable in coin, are a prior lien to that of the government.

Estimating the government bonds at par and the company's first mortgage bonds at 92 per cent, over all expense of agencies and commissions, the total cash proceeds amount to \$56,647,680, averaging per mile \$51,034.

The lands granted by Congress, whatever may be their value, not in my judgment very large, are a further bestowment from the government.

The gentlemen composing the contracting company, whose enterprise and experience so rapidly builds the road, merit large compensation. And it is gratifying to find from the foregoing estimates that, between the necessary outlay and the means provided by law, there is very ample margin for profit, after retaining in the hands of the government, to be expended by the company on the road, a liberal proportion of the unpaid subsidy, sufficient to complete and equip the work according to the standard of the law. If finished in this manner, under a higher rule of inspection than heretofore, the work will invite the through commerce between the two oceans, meet the great national objects in view and secure safety, certainty and despatch in its traffic.

The idea of bringing the road in its equipment, appointments and permanent finish to the proper standard of an efficient work, by continuing the construction after opening for traffic, is by no means new. The first object in railroad construction is, very properly, to lay the rails, even on an incomplete roadway, if necessary, so as to transport stone, ballast, and other materials with which the road, its shops, &c. are enlarged and completed. Railroad managers of experience well know the necessity of large increase of the construction account during the first few years by work properly belonging to the original construction. There is nothing in the circumstances attending the Pacific Railroad to make it an exception, but much to enforce the general rule. If

diverse views exist on this point the different can only relate to the source from which the completion and equipment fund shall be drawn. Not only the public interest but the value of the securities of the road will be promoted by putting into the work a further portion of the subsidy, rather than in burdening the future income with these necessary expenditures.

The delay in presenting these estimates beyond the time promised has occurred mainly from the necessity of awaiting a personal inspection of the profile beyond the Wahsatch range, the final location of which division was but recently completed."

There were many items in this which were incorrent; the cost of material was greater than estimated by Mr. Williams. He made this report on November 16, 1868, and did not take into consideration the great expense that the company was to during that winter and up to May 1869. Then again, his estimate on equipment and shops was very low. On the 1,110 miles of line, we had to spend something like \$8,000,000. The actual cash cost of the road when completed, not taking into consideration any interest, any discount of bonds, any commissions, etc., simply the actual cash paid out for the actual construction of the road was between fifty-four and fifty-five millions of dollars. When you added interest, all commissions, expenses of New York and Boston offices, discount on bonds and other contingencies, it was over seventy millions of dollars. The contractors received stock and bonds for the payment of building, but in building the road they had to pay out cash and this estimate of fifty-four to fifty-five million dollars is what the contractors actually paid out. The discount of bonds was a loss to the company while the commissions were an account against the contractors. Also in the final wind up and settlement with contractors, the delays caused by stopping of work, attempt to change line by Seymour and Durant cost a large sum; paid contractors for delay &c.

On December 15, 1868, Mr. Browning, Sec. of Int., following up his determination to act in behalf of the Central Pacific sent the following letter to Mr. Oliver Ames, the President of the Union Pacific Company:

Department of the Int. Washington Dec. 15
"On the 20th Oct. last, in view of the provision of the 2nd section of the act of Congress, approved July 3, 1866, I gave my consent and approval to the location of the Central Pacific railroad of California from Monument Point (north end of Salt Lake* to Echo Summit (head of Echo Canon.

It is necessary, under the law, that your road and the Central Pacific shall be so located as to unite and form one continuous road.

You are therefore requested to cause the Union Pacific railroad to be located to Echo Summit, so as to unite and form a continuous line with the Central Pacific railroad as already located to that point, and forward the necessary map and profile for file in this department.

On Dec. 30th, Mr. Ames answered him from New York as follows:

"I have the honor to acknowledge the receipt of your letter of the 15th inst.

The maps of our location of the Union Pacific railroad to Monument Point are now on file in your office, as the line is finally located on the ground, of which some 60 miles are graded and partially bridged, and the balance partially graded. This location is filled in compliance with the rules and regulations established by the department and was the only location existing on the ground (October 20) or that has been filed in accordance with your instructions.

It is the location examined by the special commissioners appointed by you, and under your instructions, and they report upon it when treating of location from the mouth of Muddy to Great Salt Lake (which includes that part of the line under consideration from head of Echo to Great Salt Lake, 56 miles) as follows:

"The railway was then mostly graded from this point (mouth of Muddy to Great Salt Lake) and there can be no question that it is on the most direct and practical route."

Again: the commissioners, in treating of the location from mouth of Weber to Monument Point, which is the balance of line under consideration say:

"The most direct, central and practicable continuation of the line from mouth of Weber canon (the point where the line enters Great Salt Lake Valley) to the head of Great Salt Lake, is to turn to the northward, pass around Bear River bay, and turning westward, cross Bear River near its mouth, and Promontory range through a low pass, from which, by a slight detour northward, around another arm of the Lake, Monument Point is reached, and thence in a few miles the head of the Lake. This is the route finally adopted by the Union Pacific Railroad company, as well as by the Central Pacific Railroad Company, and is the one on which the line of the former named company (Union Pacific railroad) was eventually located. It affords a line nearly level except in crossing Promontory range. This is passed with grades, ascending westward, of 80 feet per mile, starting at an elevation of about 400 feet and reaching a summit of 4,961 feet, from which descending grades of 53 feet per mile again bring the location down to the elevation of 4,315 feet at the head of the Lake."

To comply with your demand, and make our location correspond with the alleged location of the Central Pacific railroad, would render our company liable to have their road rejected on account of bad location, or to a retneion of the bonds of the company, and to rebuild a part of that line, as the alleged location of the Central Pacific railroad uses grades and curvatures that the country through which the line runs does not demand, and which would not be sustained except on the ground of cheapening the work.

The line filed by the Central Pacific Railroad Company occupies nearly the same ground, from head of Echo to Monument Point, as our final location, and our present graded road; the only difference being that the Central Pacific railroad uses heavier grades and curvatures, thus lightening the work, but commercially damaging the road. And we were prepared to show that no such line in fact exists, or ever did exist on the ground and that no continuous final location was ever made by the Central Pacific Railroad company from Monument Point to head of Echo.

Therefore you will see the physical impossibility of our company's complying with your request.

The Central Pacific railroad location must have been accepted by the honorable Secretary through a misrepresentation of the facts; and as their map in no sense complies with the rules and regulations of the department, under which rule the maps of both companies should be filed, we do not admit that it is, in any sense, the final location of the road, or should in any way control our location or affect our rights.

And we now most respectfully submit the following facts to show what would be the great injustice of this action of the Interior Department to us, and the great detriment it would be to our company if persisted in:

In the spring of 1868, the Central Pacific Railroad company endeavored to file a map from Humboldt Wells to Weber canon. Our company considering this debatable ground, and that either company might build over all or a portion of it, resisted its acceptance. The map was allowed to be filed by the Secretary of the Interior to Monument Point; but that map does not comply with his instructions to the Union Pacific Railroad

Company and a final location over that country had not then been made by either company; but since the filing of that map the location from Humboldt Wells to Monument Point was made by the Central Pacific railroad but not until after our final location from head of Echo canon to Humboldt Wells was fully completed.

At the time our protest was entered against the acceptance of the map from Humboldt Wells to Weber canon, we were assured by the Secretary of the Interior that no location would be accepted, between Monument Point and mouth of Weber, until the Union Pacific Railroad Company could be heard. We ascertained from our engineers that the Central Pacific Railroad Company had abandoned all work and engineering east of Monument Point, up to as late a date as November 1st, and that they had not run any line over that country since the fall of 1867, and then only a preliminary line. We received no notice from the Interior Department of the filing of such line, and did not for one moment suppose that any action would be taken on the question, and we were fully convinced of this upon seeing the instructions given the special commissioners in relation to the examination of the location over that part of the road.

At the time the map of the Central Pacific railroad was certified to by the engineer and president of the company (July, 1868) the end of the track of the Central Pacific railroad was at Big Bend of Truckee, 187 miles from Sacramento, and distant from Monument Point 470 miles, and the head of Echo 610 miles. The end of track of the Union Pacific was at St. Mary's distant from Monument Point 429.1 miles, from the head of Echo 298.4 miles, thus giving us the right, under the law, to be at work over a part of the country which their map covers. On October 20th, the date of acceptance by the Interior Department of the map, the Central Pacific Railroad track was 350 miles from Sacramento. as per data furnished by the Secretary of the Interior, and distant from Monument Point 295 miles and from head of Echo 434.1 miles; and the end of track of Union Pacific railroad was at Granger's, 228.9 miles from Monument Point and 89.2 miles from head of Echo; thus giving us under the law the right to be at work over the entire country that the map covers, and on which we could claim a portion of Government bonds.

The Central Pacific Company, on October 20, had no right, under the law, to occupy any portion of the country over which the map was filed east of Monument Point, and they had not occupied it, either with a located line nor with workmen; and today the Central Pacific Railroad track is 20 miles east of Maggie creek, 188 miles from Monument Point and 328 miles from the head of Echo.

Under section 8f of the law, as soon as we were entitled to commence work over that part of the line we did so, and long before the Central Pacific railroad was within 300 miles of Monument Point. The track of the Union Pacific railroad is now 10 miles west of Echo, covering ten miles of the ground that the alleged location assumes to cover and is within 129.7 miles of Monument point and nearly three-quarters of the grading and bridging over the entire distance is complete.

From this data it will be seen that the Union Pacific railroad track is 50 miles nearer to Monument Point than that of the Central Pacific railroad.

Again: our final location was made, the contract let, and our work opened between head of Echo and Monument Point, long before the Central Pacific railroad were within 300 miles of that point, while the end of our track from July (the date of the certificates of the map) has been all the time about 50 miles nearer to Monument Point than theirs.

By a comparison of alignment grades and distances of the two lines, it will be seen that our curvatures are less, our grades less, and our distances shorter. At the head of Echo the Central Pacific use 105 foot grades on 6 degree curves, which, equated, equals 114.5 feet to the mile. Over the same ground our grade is 90 feet, equated on the curvature to a tangent, with a maximum curvature of only 5 degrees. Over Promontory Point the grade of the Central Pacific railroad is 90 feet with 6 degree curvatures, which, equated, equals 99.5 feet to the mile; while ours is only 80 feet to the mile after equation on curves is made.

It seems to us that this fact alone should determine the question of location and that if either company is obliged to adjust their location to the other, it should be the company using the heaviest grades and curvature.

Finally the great injustice of the matter appears when the fact

is presented that the Central Pacific Railroad Company file a location, over which more than one-half the distance was then fully graded, the other half being graded, and, as they must have known, with no prospect of their ever building the road on the line filed, or, at any rate, under the most favorable circumstances over but a small portion of it. They file a map over a country that they had done no work upon at the time the map was accepted, and that they had made no final location over, except a few miles on the east slope of Promontory Point, which they abandoned early in September. Up to date of the acceptance by your department of the map in question, they had run but a single preliminary line in the year 1867, and yet they are allowed to file a map, with no topography upon it, but merely a bare red line, whose location no person could tell, through what mountains, up what streams or rivers, much less trace it on the ground, and that upon a certificate which in no way complies with the instructions of the Interior Department; while our company have been held right up to the strict letter of the instructions in filing our maps. It has also been decided, and we have been instructed that our maps must show the topography, and our chief engineer and president swear to date of location and by whom made; and we most respectfully call the attention of the Honorable Secretary to this point, together with his instructions to our company, in his letters of March 30, 1867, and August 8, 1867, addressed to the President and vice president of this road.

As the honorable Secretary, in his conversation with me on this subject on December 19th, stated that filing a map gave no right to one company over another in the building of the road; that his anxiety was only that when the two companies meet they should not be building upon two separate lines, thus preventing a connection; and as we have no desire whatever that any such circumstance should occur; and as the special commissioners have reported that the two lines are nearly identical between mouth of Weber and Monument Point, both companies, in fact, adopting the general line from head of Echo to Monument Point; and as the Union Pacific Railroad company had already their line graded to mouth of Weber and partially graded to Monument Point at the time this map was filed; and as the Central Company has not even made the final location over this distance, and as our location has been examined and favorably reported upon by the special commissioners appointed for that purpose, and as it is one of less grades and curvatures, it would be but justice to us and to the country that your action in the matter should be reconsidered, and our location adopted to a point as far west as we have a certainty of building, or, say, to a point equidistant between the ends of the two roads, and the company passing that point so to build and locate their line as to make a continuous line of both roads, and comply with the law of July 6, 1866. This would be fair, impartial, and just to both companies.

I attach to this, copies of your letters of March 30 and August 8, 1867; also copies of certificates required to be put on maps of located line, as per instructions of Interior Department and which are placed on the maps of the Union Pacific Railroad; also a copy of certificate on map of line filed by Central Pacific railroad of located line from Monument Point to head of Echo." This letter was compiled and written by me and created a good deal of favorable comment in Congress and the press.

On January 19, 1869, Mr. Huntington wrote to the President of the United States a long letter in which he tries to defend the action of his company and makes this attack upon the Union Pacific:

Office C.P.R.Co. of California,
New York, January 19, 1869.

On the other hand the Union Pacific Railroad Company, by temporary and superficial construction of portions of their road; by passing around elevations which will require to be tunneled to be fit for permanent use; by placing forces of men to work at different points from 50 to 350 miles in advance of their permanent work; by departing from the location approved by the Secretary of the Interior, and constructing the road without regard to any approved location, are seeking to take advantage of the delays to which our company was subjected in the mountainous region and thus gain possession of portions of the proposed road which they would not be able to reach in advance of us if their road was substantially built, and upon the permanent line approved by the Secretary of the Interior.

The purposes of the Union Pacific Railroad Company in adopting this course are probably threefold:

1st. To obtain the Government subsidies on that portion of the line located by us and approved by the Secretary of the Interior.

2nd. To divert the trade of Salt Lake City and vicinity to this road, which, otherwise, would naturally come to us.

3d. To reach and claim certain coal mines (necessary to us for fuel) lying in the Wasatch mountains.

All these we can reach first, and become fairly entitled to, if the Union Pacific Railroad Company are required to build their road in a substantial manner, as we have built ours, and keep strictly to the permanent line approved by the secretary of the Interior.

Had we chosen, by hasty and incomplete construction to push on our work in order to gain the Government subsidies and pre-occupy the ground, we might have gone aside from our location in many instances, built temporary tracks around mountain elevations, and tunnelled them at our leisure: by so doing we might have saved a year or more in time, and met the Union Pacific railroad east of the Wasatch mountains. But should we have complied with the law, or fairly, and in good faith, earned and used the Government subsidies? We think not."

A complete answer to Mr. Huntington's letter was the report of the commissioners, but the last report of the commissioners did not get before the Johnson administration, as it was dated May 12th, after they were out of power.

On February 10th, 1869, after we had learned that the Central Pacific road had applied for bonds on the located line 100 miles in advance of what they claimed to be the end of their track, Mr. Ames filed the following protest:

Office Pacific Railroad Company,
20 Nassau St., New York, Feb. 10,
1869.

"I have been informed that the Central Pacific Railroad company have applied for an advance of United States bonds under the 8th section of the act of July 2, 1864, on that part of the route lying between Monument Point and Ogden. As the Union Pacific Railroad company is constructing the road on this part of the route, and will very soon apply for the bonds authorized by law on completed work, I think it proper to notify you of the fact. I will further add that the Union Pacific Railroad company began the work on this part of the road under the authority of the act of July 3, 1866, the same being at the time within three hundred miles from the end of their completed track, and being at that time more than three hundred miles beyond the end of the completed track of the Central Pacific Railroad company.

Nor are the rights of these companies affected by the fact that the Secretary of the Interior assented to and approved a map filed by the Central Pacific Railroad Company, indicating a general course for the building of the railroad in that region. It has been decided by the Secretary of the Interior, after consultation with the President and Cabinet, that the located line of our road is covered by the map he approved for the Central Pacific Railroad Company."

This contest continued within Departments until March 3, 1869. The day before the Johnson administration went out of power, by order of Andrew Johnson, Hugh McCulloch, the Secretary of the Treasury issued the following order:

Treasury Department, March 3, 1869.

"In pursuance of the acts of Congress in such case made and provided, and in consideration of the completion by the Central Pacific Railroad Company of California of certain work upon the five sections of twenty miles each of their road, commencing at the 560th and terminating at the 660th mile-post east from the initial point at Sacramento California, please issue one million three hundred and thirty three thousand three hundred and thirty-three and 34/100 dollars (\$1,333,333.34) of bonds of the United States, to bear interest from the second day of March 1869, and deliver to the company bonds to the amount of \$833,333.34, retaining \$500,000 until security is given by the company for the completion of the road according to the requirements of the law."

This order covered the bonds on the 100 miles extending from the vicinity of Ives Pass, which is 50 miles East of Humboldt Wells to the vicinity of Monument Point. This did not cover the line which we built over, but it covered the line that we had graded over.

On March 2nd, 1869, Mr. McCulloch issued the following order:

Treasury Department, March 2, 1869.

"In pursuance of the acts of Congress in such case made and provided, and in consideration of the completion of certain work upon four sections of twenty miles each of their road by the Central Pacific Railroad Company of California, commencing at the 660th and terminating at the 740th Mile-post east from the initial point at Sacramento, California, please issue one million sixty-six thousand six hundred and sixty six 66/100 dollars (\$1,066,666.66) in bonds of the United States to bear interest from the 17th day of February, 1869, and deliver to said company bonds to the amount of \$566,666.66 retaining \$500,000 until security is given by the company for the completion of the road according to the requirements of the law."

2202
This order covered line at a point 8 miles East of Monument Point to a point six miles East of Ogden. This was on the line which we built over and which was at that time mostly graded. This alone shows the injustice of the order. The Central Pacific had done some grading on this line but not much. Under this order only \$566,666.66 was delivered to the Company, the Government retaining \$500,000 for the completion of this 500 miles.

As stated hereafter, the next day, President Grant came into power and an order was issued to both the Treasury and Interior Department prohibiting any action of either department on either road.

Dec.

On the 6th I received a letter from Mr. Blickensderfer from Omaha, as follows:

Omaha.

"Our report on Kansas line is not finished yet. By appointment we visit Sioux City Road tomorrow, although it snows and storms furiously today. I hope next week will finish our work with these roads.

You have no doubt seen the reports or notices in the papers in regard to our report on U.P.R.R. and the slurs aimed at me, by Seymour no doubt as in the enclosed slip cut from Chicago Tribune. I felt like publishing a denial of the assertion that I was discharged by the Company, but thought I would write you first. You know that it was with reluctance that I accepted the appointment, and that your desire that I should do so had much weight with me. May I not therefore look to you in some degree at least to keep me advised of the course of Seymour and those who would gladly injure me, and the effect of their acts and assertions, and whether I ought to notice them or not. At this distance it is difficult for me to either find out what they really do or its effects.

That Seymour and those whose pockets are likely to be effected by the report will do all they can to injure me is not singular, and I presume it is not singular either that they should resort to falsehood if it tends to further their ends; in case I should publish anything would you object to my saying that no one on the part of the Company made any objection to my acting on this Commission? and that I was granted leave of absence to enable me to do so?"

On the same date I received a letter from Mr. Jesse L. Williams and in speaking of Seymour's report he says that there is a mistake of a million of dollars in his bridge report where he estimates cost of line to Omaha; also in his estimate of cost of a mile of road; he also says Durant always contended for 116 ft. grade and sharp curvature whenever it would save work and he has talked it time and time again to the construction engineers in altering grades and alignment to save work. Thinks they better let Blickensderfer alone in his location.

On Dec. 8th Mr. House wrote me from Omaha that they had had a fearful snow storm, road was blockaded in many places West; that Evans had telegraphed that no track would be laid in eight days; grading in the way.

To make up my report on what was needed for the purpose of
company furnished
bring the road up to the specifications the contractors, I
sent the following letters to Mr. House and Mr. Snyder for
reports

"I want a copy of report up to Dec. 31st, 1868. It can be gotten up now as follows: List of buildings on road and at what points; this to include machine shops, round houses, station houses, section houses, tanks, wind mills, coal houses, eating houses and everything pertaining or belong to the road.

2nd. Length of siding at each point or station. These want to be gotten up carefully and Vedder can be sent over road to get new cars, additional sidings, &c. and have made up from his notes.

I do not get my profiles from rim of basin to mouth of Weber from Ricksecker. Telegraph him about it; also see as soon as possible, profile of line from mouth of Weber to Red Dome Pass and from there to Humboldt Wells. What that to Red Dome first." To Mr. Snyder:

"I would like your opinion, for my own private benefit on the following points.

1st. On completion of road; what No. of passenger engines will be required? that is, one on how many miles of road; also freight engines.

2nd. How many 1st class passenger cars, 2nd class passenger cars, express and baggage cars, box cars, flat cars, coal cars, making them so many to a mile.

3rd. What amount of additional siding will the company have to put in that the contractors have not?

4th. Can you get at the cost, up to this time, of the stations on the road, coal houses, eating houses, wells, tanks, wind mills, machine shops and machinery, tools, in these round houses &c. that applies to the equipment clause.

I have to retain, on the contract, enough from our contractors to carry our entire equipment up to \$7500 per mile.

Also send me list of engines on road and cost, list of cars, & cost, including all on N.W.R.R. or at any point built. Assume Jan. 1, 1868 as date to bring this portion up to and we may assume the road, when completed to be 1100 miles long, but the length will make no difference, as we put so many to a mile."

Dec.

On the 8th Mr. Jesse L. Williams wrote me as follows:

J. L. Williams

"I shall be greatly obliged if you will send me promptly all reports, &c. concerning U.P.R.R. or other roads printed by the House; also Secretary of Interior's report. I could write our own member but he would not know what I want as you do.

Durant and Seymour's entire answer on Commissioners report wont "hold water". It is all humbug. Some very sound R. R. men in N.Y. say that the U.P.R.R. Company will break soon after R.R. is opened. I hope not. But then in this interest first 6 months on 1st mortgage bond will be \$1,200,000. How will they get it? If the contractors get all the subsidy and 1st mortgage as they want, they will be very apt to default within 1st year or 18 months. Even Harbaugh thinks it cant pay at first. We had better get a reserve fund in same way as the bonds of the Company, as Durant says the President will accept the case.

I have no doubt but Durant expects the road to default."

Mr. Jesse L. Williams in his estimate of the cost of the road, without equipment, as accepted by the commissioners ^{three} ^{to approve} without any additional work put upon it to bring it up to my specifications ^{would} ^{found the} estimated that it cost \$135,000 per Sec. in cash and he makes this statmenet in relation to it:

Jt. Wayne Ind.

"While the Honorable Secretary of the Interior has stated the aggregate amounts of my estimates correctly, he has misconceived my mode of estimating.

1st. He says the estimate was based upon the first 710 miles, in August last, was made the basis for that item, and also that the bridging and general finish on the 710 miles was made the basis as to the degree of perfection in the finish of the whole line. But as to the grading, cost of track, &c. each division of the line was estimated in proportion to the expense to be incurred.

2nd. He says the cost of locating, constructing and completely equipping it and the telegraph line is \$38,824,821" an average per mile of about \$35,000. But in the report, referring to this estimate, I say "It does not include the whole cost as the road should be completed, but as heretofore built and accepted by the Commissioners." For a fully completed road there should be added, according to Gen. Warren's report, about \$7,000 per mile making \$42,000 as the cost of the road completed; or if \$5000 be added then \$40,000 per mile would be the cost of the completed road.

Will you have the goodness to explain to the Hon. Mr. Ames or others interested in the road, and also to the Pacific Railroad Committee, this correction, for which perhaps you can use this letter if necessary.

I will tomorrow mail to the Secretary of Interior a short report supplemented to mine of 14th November, embodying the above explanation. "By adding these sums to Mr. William's estimate and the cost of equipment and the money spent after the tracks were joined to bring the road up to my specifications, Mr. William's estimate would

On December 12th, Mr. House sent me by express, map and profile of the 12th 100 miles of located road for me to file in the Interior Department. Mr. Snyder reported on the 13th that there had been built 64 stations, 73 water tanks, 15 coal houses; that equipment consisted of 124 engines, 21 first-class coaches, 10 2nd-class coaches, 81 cabooses, 16 baggage and mail cars, 8 sleeping coaches, 520 box, flat cars, 1734 flat cars and 100 coal cars. This was the total equipment on the road, while the contractors were to furnish \$7500 per mile of equipment and shops. The shops did not cost over \$1000 a mile for the amount we had put in.

On December 15th, Mr. Snyder wired me that he had telegraphed the Post-office Department at Washington that we were ready to carry the U.S. mails to Evanston, 96 miles west of Bryan.

On December 14th I went to Chicago and attended the reunion of all the armies.

On December 15th, Mr. Snyder wrote me that he had agreed with Mr. Blickensderfer as to the amount of equipment needed for the road for the contractors to furnish to comply with the contract; one locomotive for every five miles of track; three flat cars; one-third box, one flat for every one mile; passenger coaches,

not be much less than actual cost of road.

two-thirds first-class, one-fourth, second class for every twelve miles, one mail and express car for every forty-eight miles; one baggage car on every forty-eight miles and side tracks of 2000 feet for every six miles. This was a much less estimate than mine, but Snyder was estimating for the business at that time and I was looking to the future.

Dec. 1868
On the 16th Mr. Snyder wired that no track had been laid for two weeks. Snow west of Laramie was troubling the track layers.

Dec.
On the 16th Mr. House furnished me with the maps and profiles of located line on the 13th 100 miles. The track reached Evanston on the 16th. As we were nearing the completion of the road, the papers in the country first commenced taking up the question of subsidies. In my own state, the Register had a line of articles on Government subsidies to railroads, and against any subsidy to the Puget Sound enterprise.

Dec.
On the 17th Mr. Snyder wired me that they had had a very heavy snow storm.

Dec.
On the 18th I received the following from J. F. McCabe from Salt Lake:

Salt Lake City
Govt. section lines.
"I want to be relieved from surveying. Worked 4 days, accomplished nothing. Impossible for me to trace U.S. Survey; all section corners and mound disappeared, useless for me to try longer. Instruct me by telegraph to this place what to do with my party and outfit."

On the 18th Mr. Snyder wired me from Omaha that the Commissioners got only ordinary allowance for last examination. He did not propose to bleed any more unless instructed in detail by New York office. The fact of the matter was that when Mr. Wendle who was appointed on the Commission made the examination of his first twenty five miles west of Green River. When the commissioners came to examine it, he told them he did not intend to examine it in the cars; he proposed to walk over it and find such defects as he could; that he was there for business. Snyder was present and before he could get the section accepted by Wendle, he had to pay him \$25,000. This was kept a secret for some time but finally came out.

I wrote Mr. Snyder that under no circumstances should he pay a cent as it would ruin us and it would give the politicians such a hold on us that we would never recover from it. While it got out, it did not seem to cause any criticisms at that time. It looked as though as long as we kept laying back and pushing West, no matter what we did, it would be accepted. We had a similar case of this with Snow, who was sent out on the road to make an examination and his report was brought to me for sale. I refused to pay a cent upon it. It was finally offered to me for \$1000. He had two reports--one was a very severe criticism of the road and the other was a favorable opinion of it. Finding that he could not obtain anything from us for his report he filed it in the Interior Department. I immediately filed with the Interior Department, a protest, demanding that it should not be used and told them it had been for sale and was a black-mail report and if the Interior Department used it, we would take proper action in that matter.

In July 1868, the Central Pacific Company filed a map with the Secretary of the Interior covering our line as far West as the head of Echo and notwithstanding our protest in November, the map was accepted by the Secretary of the Interior.

On Saturday Dec. 19th, I called upon the Secretary of the Interior with Mr. Oliver Ames and had the following conversation with him as to this location:

"Visited Mr. Browning with Mr. Ames and had a long conversation with him as to line located to head of Echo. I informed him that the C.P.R.R. Company had never located the line, it was merely on paper ~~that~~ curves had never been run in, &c. The adoption of this map filed in July by the Company and accepted in November by the Secretary is an outrage and cannot be justified by any reasoning. In reply said, 1st that line was never located on ground. 2nd that it is accepted when over 100 miles of the ground it pretended to lay upon has been graded and properly bridged by the U.P.R.R. Company. That it is used unnecessary curvature and steep grades, &c. 3d. When filed by the Company the end of track of U.P.R.R. was near Monument Point than C.P.R.R. and that the 300 miles that we are allowed to work in advance of track has covered this ground. That since the date of acceptance November 13th and when filed, the end of the U.P.R.R. was only 60 miles away from the head of Echo and from

Monument Point where the C.P. R.R. track was run. 4th. This map does not on its certificate in its detail conform with instructions given by the Secretary of Interior on filing map which it sees the U.P.R.R. Company are obliged to comply with, and the C.P.R.R. are not obliged to comply with, see, letter, &c. 5th. the line as located and built upon by U.P.R.R. as the line reported on by special Commissioners in which they say: "It is also from mouth of Weber to Monument Point the line declared by them is not practicable and on which they estimate." Their line pretends to lay on the same or very nearly the same grade that ours is now building upon. The injustice of this appears when it is shown the difference in distance from Monument Point to end of each Company's track which is as follows: "and when present for filing the law gives them no rights, they not being even within 300 miles of track." Finally the C.P. Company have no probability of building over any portion of their line while the U.P. Company are now laying track over a portion of it and early in spring will cover the entire distance."

(Dec. 19).

On the same date, knowing this matter would come up in the Cabinet, I wrote the following letter to General J. M. Schofield, the Secretary of War:

"I am told that the question of the guarantee of Union Pacific R.R. to complete the road in accordance with the law, will come up in cabinet meeting Tuesday. The Co. make liberal propositions. Will you, before considering it, please read the answer of Mr. Ames, our President, giving estimate of what has been expended. You will see the actual amount to be retained on completed road, in accordance with report of commission is about \$2,500,000 or \$3,000,000, which I think is all right and proper Government should be secured in. The estimates in Mr. Ames' report you can rely upon; also, the work done. You will remember that the Commission examined ninety miles of road never submitted by the Co. to the government for acceptance, but which the commission examined and estimated on. We had built on this 90 miles few permanent bridges, no stations, shops or tanks and which made a vast difference in the estimate since then we have completed the 90 miles and more and it has been accepted by the regular commission and bonds issued on it, which makes a large deduction from the estimate. The commission also made no allowance for work in progress or material on hand. These facts are fully set forth in the Commissioner's report, and Mr. Ames report gives an estimate of material on hand on the 890 miles examined. Again, what I look upon as unfair, unjust and very detrimental to us and to the government is that one commission of able, critically, railroad engineers should examine road on this side of the continent and another commission should examine the C.P.R.R. assuming, as they have, on an entirely different basis. I know all the roads and state, without fear of successful contradiction that to bring the U.P.R.R. up to any standard government may establish, will take far less per mile, than upon any other of the Pacific Railroads; therefore, let us have all the roads examined upon the same basis under the same instructions and by the same minds, so that we may arrive at the true merits of the question. one class of commissioners seem to think that a first-class railroad is one thing while the other class seems to differ entirely and the difficulty that we labor under is that while we had the best built, equipped and appointed road in all its departments, we are the only road that has had any trouble in obtaining its bonds; and while I am perfectly satisfied with the action of the Commission, I do hold that they should be immediately sent to the Central Pacific and examine that on the same basis. You will see that upon the W.P.E.D. and the S.C. and Pacific they retain three times as much per mile as on ours. The C.P. goes free and use the report of our commission to harm us in the money market; while the other commission send in a telegram that it is

or will be built within the law. If they report minutely on its construction, its ties, iron, stations, tanks, turn tables, shops, and machinery, you will find out we have far more per mile than they; that our structures are full as good, and that our location in grades is far less and in curvature and alignment much better.

I desired to call on you and explain personally the matter, but I am obliged to go to New York Sunday night and I know that with a full understanding of the question, you will agree fully with me that Gen. Warren and Mr. Blickensderfer shall examine immediately that road, so that government may receive the completion of a first class road through to the Pacific. By reading Mr. Ames' report, you will get a pretty fair idea of the condition of our road and what should be retained, and by reading the report of the Commission on the U.P.R.R. E.D., and Sioux City and Pacific, a pretty fair idea of the comparative merits of each."

The action of the Secretary of the Interior took me to New York to consult the Board of Directors as I saw it was going to be a very long fight and bound to get into Congress. The great fear was that they might get bonds issued on the line, which, under the law, it was possible to do as they had with them the Secretary Everts and Secretary Browning. I felt that Secretary McCullough of the Treasury was opposed to them. I knew if we could delay everything until the new administration came in, that we were in no danger because General Grant understood the matter thoroughly.

1868 Snyder.
On Dec. 22nd, Mr. A. wired that there was 815 miles of track laid, that they had over 300 cars of ties and iron west of Benton and were supplying faster than they laid track and that he had 40 miles unloaded at Benton. He also wired that Durant, Seymour and General McCullom were at Chicago. "Durant is sick there. Expect all here in a couple of days. Have my goods ready for any emergency and can retire in good order."

Mr. Ricksecker who had charge of my office in Salt Lake City, all of our parties having been discharged except what were on construction, wrote me on the 22nd that the Central Pacific road have located to the western slope of Promontory and are now working on that; that they had graded across the Mud Flats, west of Promontory; also that they were grading on the western slope of Promontory and in places between there and Ogden City.

On December 24th, I commenced writing my answer to Browning's letter on location.

Mr. Ames was in Washington to settle with the Government on the amount of bonds that should be retained to comply with the Warren and Blickenserfer report. We finally settled that one-half of our first-mortgage bonds from the 900 mile post West, until the amount was \$3,000,000 should be retained by the Government.

On ^{Dec. 1868} the 24th, Mr. R. M. Walker of San Francisco, Engineer of the Northern Pacific sent me maps and profiles of Cowelitz Pass; also map of Sno-qual-mie line.

On ^{Dec.} the 23rd Mr. S. B. Reed said he had paid for grading, machinery, ties and bridge timber from the present end of the track to the head of Echo to Salt Lake Valley, \$2,260,000 and that he had paid for grading west of Promontory Point \$95,000 up to the first of December. Nearly one month's work was to be added which is not yet estimated.

On ^{Dec.} the 24th Mr. Ricksecker wired me that the Central Pacific had located through to Ogden and that they were grading on mud flats and on eastern slope of Promontory, and in places between there and Ogden.

On ^{Dec.} the 25th I wrote to Mr. House that "the profiles of the lines over Promontory returned here were the 90 ft. grade line; that the line adopted is 80 foot grade. As soon as McCabe's party has established the line through ^{Government} sections up past Ogden and the table land you better go to Ogden and superintend the establishment of that town. Morris has instructions to ascertain the cost to bring water to it, and McCabe also has instructions to determine definitely the odd and even sections."

From the estimates of Mr. Reed, on the 26th I notified Mr. Ames that the grading, masonry, ties and bridge timber ^{from} head of Echo to Salt Lake, 55 miles, cost \$54,000 per mile, adding \$1500 per mile for iron makes the road cost \$65000 per mile. There is much yet to be done. Up to December 31st, \$500,000 additional was spent.

Mr. Morris wired me that the Central Pacific railroad on July 15th was at the Big Bend of the Truckee. October 22nd at Reece River, December 24th, 24 miles West of Maggie Creek, or 40 miles West of Humboldt Wells. I find this note in my diary of December 27th:

"On completion of the Pacific Railway, New York will then lay directly in the great highway between Europe and the East; the whole world will be turned round and the theory of Columbus verified at last.

It is estimated when U.P.R.R. is completed the journey around the earth will be reduced to 80 days. Now it takes 104; not only the water course between Japan and Europe but also between Australia and Europe will then find its quickest route across the American continent."

1868

On December 27th the track was seven miles down Echo Canon.

On December 28th General J. A. Williamson wrote me that he could not seal any lots at Evanston. Everyone wanted to go to the town in the valley. Echo City at the mouth of the canon killed the Bear River town. "This town is owned mostly by the railroad men and they do all they can against the town laid out by the company. I was over in the valley a few days ago and saw McCabe who you know is trying to find the original government surveys. He told me that he could not find any of the corners. I saw Gen. Clark the Surveyor General of Utah, and he says the Government will have to cause a re-survey to be made. Dr. Durant requested me to write to you and ask you to try and get Clark ordered or authorized to make a new survey. Brigham Young wants the town at Ogden, but I see no chance for the company to make anything there, as the Mormons have possession of all that country and territory."

1868

On December 30th, Mr. James A. Wilson wrote me as follows:

Washington, D.C.

"I find that a new question has arisen in the Treasury Department of interest to you and those engaged in the U.P. You may have heard of it, but I thought it worth while mentioning as possibly it has not come to your knowledge. The question arose out of the power of the U.P. & C.P. to issue first mortgage bonds on these respective roads, for 100 miles in advance of completed road. The two roads on nearing each other, suppose the amount of first mortgage bonds issued by them respectively lap 50 or 100 miles, how is the Government to determine which company will build the extent of line represented by the amount of Company's bonds so issued? If the U.P. should build 50 miles of road west of the point covered by the C.P. Bonds, then the latter would not be entitled to U.S. bonds on their last 50 miles of road actually constructed by it, and, of course, the reverse of this statement will apply to the U.P. This being the case it looks as though the two companies must agree on the point of junction, otherwise

run the risk of having Government bonds withheld until the junction should have been effected. This is the case as I got it. If you have not heard of this before, you need not disclose your source of information.

It is probable that I may run over to N.Y. thursday night, though I dont much expect it.

The Iowa bill will come up on Thursday in the morning hour, unless the morning hour shall be dispensed with. The only safe plan is to be on hand."

I do not have Mr. *my* Williams reply but it was virtually the same as I had made to the Secretary of the Interior in my statement of the case to him.

1868
On December 26th Mr. Oakes Ames wrote me:

"I see by a California paper that the Central Pacific intends to meet us 150 miles this side of Salt Lake and at the foot of the Wahsatch mountains."

As our track had already passed this point, the prophesy did not seem to have much foundatin in fact.

On January 2, 1869, Mr. Blickensderfer wrote me as follows:

"I arrived here yesterday evening. McCabe was here expecting me, having left his party in charge of Mr. Moberly near Brigham City a few days ago. He has extended his work from mouth Weber Canon to near Brigham City, showing all the sections cut by our located line. He did not get my letter relieving him until a short time ago, it having been delayed on the way. He still desires to go East, and I have directed him to make a short statement or report of his doings, embracing the facts communicated to me in conversation and which will answer your letter to him dated some time ago which he has shown me. This he is now engaged in doing and when finished he will go.

Morris and Ricksecker were absent at Ogden where they went to meet Mr. Durant. They have just returned. Morris expects instructions from Durant to go with party to Promontory to run additional lines in a few days. Ricksecker says there was talk of removing the office to Brigham City and he thinks he may be instructed to move it up there. Morris' party is camped near the Warm Springs with their line at the edge of the city ready to close in one more day's time.

My desire is to settle my accounts here in the shortest possible time, dismiss the men or turn them over to construction; gather up papers, maps, &c. and remove this office to Omaha and then finish up my report. I ought to get away from here in a week or less, but may be detained. If Durant orders the office to Brigham City, I shall consider that as a delivery of the papers to Omaha, and pay no further attention to them, except to consult them as far as necessary to make up my report. Is this correct? If I cannot take the profiles and maps to Omaha, I may be obliged to stay here until my report is finished.

Mr. Morris informs me that several letters which he thinks you have written him were never received, and this explains why they were never answered. Two or three letters which he says were addressed to me at Omaha I never got.

The track was at the stage station at the foot of Echo grade when I passed there on the night of Dec. 31st. It ought to be at Echo City on the 10th inst or before. Morris tells me that nearly one-third of the distance from mouth of Weber to Bear River crossing on U.P. Line is graded, but thinks less than 1-4 of the work between those points is done. Nothing done between Bear River crossing and Promontory summit, a little done on west slope of Promotnory and

from foot of west slope to Monument Point nearly all is done.

The Central Pacific Company have their grading well advanced between Monument Point and foot of west slope of Promontory; little or nothing done between that and Bear River crossing, but considerable work done between Bear River and Ogden. This work between Bear River and Ogden is lighter than ours and for that reason they have a larger portion of that line ready for the track than we have, but not as much labor performed as on our line. Their location undulates more, and has more and sharper curves.

Our line along Clay Bluffs this side of Ogden is changed and thrown on sliding hill-side, and will be changed at other points between Ogden and Promontory.

Before I go East I desire to ride over the line from here to Ogden, and may extend my trip to Promontory or Monument Point to see how things look unless you think I should not do so. I ought at all events to see Maxwell before I go away, and he is on Promontory I understand; and I should like to see the Central Company's line.

At Omaha, I received your letters of 9th, 10th and 21st, Dec. You think we set the coulter too deep. I hope we shall not break the plow; but seriously it will take more money to put your road in good working condition for permanent use than you think, and if we live ten years I think you will admit it. Besides it would have been an easy job to let the plough run deeper still.

I will be in a few days send you calculation of strain on bridges as requested. I thank you for your kindly feelings expressed in regard to newspaper, squabs, &c. The Omahapaper published Warren's letter and made honorable explanations, I am told; did not see the article.

M.C.
I wrote Brigham before I left home as you may have ascertained before this time. That the location of the Central Pacific line is much inferior to yours is very certain, and it seems to me Durant should be a little cautious how he changes it or he may not be so well able to resist Browning, or will meet him less advantageously. As we made the location every engineer of any character will at once tell Browning or Congress that our line should be taken and not that to f the Central Company. As Durant may lease the line or rather build the road, this may not be so clear.

I am surprised at the action of the Government in accepting the C.P. location to head of Echo, but I fear Dr. Durant has in some way got the Government officials prejudiced against him, and this would naturally send their sympathies to the other side. May there not be lack of confidence in the Doctor's statements or want of trust in his word which has injured your road? The long grasp to Humboldt Wells and its subsequent abandonment, the first no doubt made with many assurances and assertions which could not be made good, I fear has had much to do with all this, and would naturally tend to destroy confidence in all things from the same source, even if they were true.

Morris tells me the line of the Central Company up Weber and Echo was an angle line and no curves run in. I mean their line of 1867 was the only one they had. This he is confident of. I will collect all the information I can in regard to their lines and work so that if desired I think we can show that they certified to an actual falsehood. If there is anything special you wish me to do, advise me."

Our great difficulty in contending with the Central Pacific was that the administration and the Departments had lost all confidence in Mr. Durant and many of the decisions against us came on account of his interference and statements. The trouble was when he was in the company he was favorable to it but when he was turned down or ignored, then he was opposed to it and the Central Pacific could use his statements with great effect and it

was very hard for us to overcome them. He made every effort to get Blickensderfer put off of the commission which examined the roads, while he was by far the ablest man on the commission and the fairest and when they came to an examination of the Central Pacific, his decisions were all in favor of the Union Pacific lines.

Mr. Durant showed his animosity to Blickensderfer by sending him the following:

U. P. Ry. Ogden, Jan. 2, 1869.

"You will please consider your services for this company at an end from and after the time when you left your work to accept an appointment under the Government.

The office, instruments and papers at Salt Lake City, together with any other property in your possession belonging to the company will be turned over to Mr. T. B. Morris, acting division engineer. Your accounts will be settled by the Chief Engineer."

Of course this letter was a very injudicious one and made the Interior Department very angry. I was in Washington at this time, but when I took it up with the company, the mischief had been done and no matter what we did, it could not be avoided.

I immediately sent an order to Mr. Blickensderfer countermanding Durant's orders and on January 6th, ¹⁸⁶⁹ telegraphed him as follows:

"Remain in Salt Lake until you hear from me. Close your accounts with the Company. Make your report as soon as possible."

It was very necessary to have Mr. Blickensderfer's active help in the contest of matters with the Central Pacific. I wrote him my views fully of the line that was laid by the Central Pacific up to the head of Echo Canon; that they had taken their preliminary reconnoissances and worked in curves on the maps which they had never run on the ground and this was the line they had filed and was accepted by the Interior Department as the located line.

On Jan. 5th, ¹⁸⁶⁹ Mr. Blickensderfer wrote me a letter from Salt Lake as follows:

"Yours of 26th Dec. is received. I have already written you the state of the work out here, and what Mr. Morris had added in his letter of yesterday will supply deficiencies in my correspondence.

That the estimates and expenses of the last month or two are high, I do not doubt, and that your company is being fleeced is to my mind very probable. That Brigham Young and Bates should fraternize is to me rather strange, knowing the opinions formerly entertained by Brigham of Bates, but the fact is true, however strange it may appear. This I know.

There is no doubt that your idea is correct that the C. P. Company has merely adopted their preliminary line of 1867 and drawn in the curves. But it seems to me they themselves disapprove their own statement by the marks on their stakes. You will remember when I

was at Humboldt Wells to start the graders, I passed Eve's O at the pass. From the stake standing there, I copied the marks on it. They were "C.P.R.R. location O, July 25, 1868." This shows at once the time they made their location there and by their own acknowledgement. Their parties have placed similar stakes at other points; one at Ogden, another near our summit on Promontory, and another at Monument Point. I have no doubt the dates are marked on each and it was my desire to visit the line, see these stakes, note the dates and look over the location of their line. This would enable me to give my opinions from my own knowledge of a reliable character which I hoped might be of value to you. but in the present condition of affairs, I do not feel so much at liberty to make this personal examination.

I claim to be a friend of your road, my sympathies are all with you. Your location I know to be good and that of the C.P. Company, as far as I have seen it, is inferior to yours. I think they have simply imposed an untruth on Mr. Browning, and if so I would be glad to possess evidence by personal knowledge, which I believe exists to prove this to the satisfaction of your friends or the cabinet at Washington if necessary. These being my feelings, I am not disposed to let the ~~bad~~ treatment received from Durant and Seymour influence me, but I am inclined nevertheless to do all for you that I can, and go East fully armed with the best information I can collect. On the other hand I am not inclined to go out on the line ask questions and drum up facts with the liability of being snubbed off by any subordinate hireling with the question "What business have you here?" For I know pains have been taken to let it be known that I am stripped of authority.

I am yet undecided what I will do. My desire is to get away from here as soon as possible. In another day or two I will have settled all my accounts to Jan. 1, 1869, and will be ready to move away from here on short notice. Morris has finished branch location and starts his party for Promontory tomorrow He has telegraphed you his orders from Durant as well as I. When your answer comes tomorrow, we shall probably know what is to be done. I expect track to be at mouth Echo by last of this week or early next."

I had been told, confidentially, that Mr. Blickensderfer was to be made one of the commissioners to examine the Central and Union Pacific and determine which had best ~~location~~ between Echo and Humboldt Wells and amount each required to ~~expend~~ to make it a first-class road, but I was not at liberty to tell him. It was for that reason that I instructed him to close up his accounts and get in his report of the Union Pacific before he entered upon that work.

On Jan. 4th, ¹⁸⁶⁹ I received the following letter from Mr. Snyder who was out on the line:

"Yours Dec. 12th, 21st and 25th, reached me here. Have been at this end of road since 20th ult. doing what I can to forward construction. Will stay for some time yet.

There is so much to say about the work out here that I can't do the outfit justice in writing about it. In construction the waste of money is awful. It is the last part of Reed and his outfit and they are making the most of it. The track west of Aspen is not fit to run over and we are ditching trains daily. Grading is done at an enormous expense by day work under supervision of Company's men and the government subsidy in this section of country will not begin to pay cost of road.

Durant and Seymour are at Ogden. Stanford of Central Pacific there also. Huntington, Vice President of C.P. is at Salt Lake. I have arranged for man on C.P. to keep you posted on their progress and prospects.

Track tonight is at Castle rock; 4 miles west of there we will reach 12 miles of ties already laid. These ties cost over \$4.50 each

on the ground. Ties are now being delivered 8 miles east of Evanston and in few days I think enough can be gotten there to supply demand for construction.

Thos. H. Bates and Maj. Lawrence, engineers on construction, have been discharged by T.C.D. They both deserved removal. Evans has taken an interest with Ledlie & Corse in contract for some bridges here. I think T.C.D. would have extended his division if Evans had possessed the necessary muscle, but he has smelled the crows and fishes and weakened.

I am securing a good supply of subsistence stores and forage here for the contractors so as to be ready for any storms. Am going my best to supply all demands for material, and my men are working like tigers. Personally am about worn out and if I had money enough to support my family six months, I would quit now. The company can't stand such drafts as I knew the Construction Department must be making.

January 5. Have made some progress with track today. I think I can close the tie gap tomorrow which will give us 12 miles clear sailing. Weather mild and if it continues so we ought to reach Ogden by Feb. 10. K.

Have not opened for business regularly west of Bryan - from there attach coach and baggage car to construction train. Government pays us for mail services to Evanston. From Evanston to Wahsatch I will collect for mail from Wells, Fargo & Co. at Government rate. The P.O.D. will not accept extension of mail services for less than 25 miles. Have been bringing goods for Salt Lake to Evanston by car load, owners risk and handling. I don't want to advertise as ready for business such a road as Reed has turned over to me west of Piedmont. Will put a steam excavator on if I can get it to secure the banks.

Can't place any reliance on what we hear from Salt Lake in regard to progress on the Central Pacific. Will have the man sent there, write to you daily.

My greatest difficulty now is with the transportation on Bitter Creek; had ten dead engines there yesterday. The water has always been bad and since ice formed the balance grown worse daily. I have asked N.Y. office to buy for us 12 regular tenders capable of holding 3600 gals. water each without any space left for fuel. These attached to ordinary tender will give water enough to run freight trains, Rawlins to Green River. This is the cheapest solution I can suggest. N.Y. office must help me more promptly with funds or there will be much suffering. I spent up to Dec. 1st during 1868 over \$1,800,000 on construction account. Transportation of contractors material to same date amounts to over \$1,000,000 at rate allowed for freight 16-10cts per ton per mile, which does not cover actual cost. Material and fuel on hand was over \$1,000,000 which is not a large amount for road of this length. I am obliged to keep on hand supplies to meet every call of the contractors promptly and lay out of the use of the money. We purchase and pay for all their supplies and charge up when paid. If some of the Directors were on the line they would have a better idea of the way things are managed and would be somewhat surprised to observe what the Company has to do after the road is nominally completed. I could not stand three years more of such service as I have had on the Union Pacific. And I will suggest here that my salary has never been established. Have drawn money, of course, from the

Cashier to support my family; would like to know what I am to be paid. Reed and Seymour have salaries of \$8,000 and think I have worked as hard and as faithfully as either of them and have had heavier responsibilities. Carmichael on the grade gets \$6000 and expenses. If proper opportunity occurs I wish you would suggest fixing the rate, as my salary is all I have to depend on.

Hoxie is writing and telegraphing me daily, but I fear is not as well as we all wish. As soon as I can return to Omaha will urge him to go to Laramie - for change of air and relief for few weeks from active duties. Campbell, Supt. of Laramie divisions, resigned. I offered the place to Dave Remick but he declined. He is getting \$5000 a year from Wells, Fargo & Co. as their manager south of Cheyenne. Am promised a man by name J. W. Meaks, now Gen. Road Master of Watertown and Oglesbury R.R.; formerly Asst.

Supt. of the Miss. & Mo. R. R. I know him to be thoroughly honest and capable.

I cant understand how Reed could have spent \$2,600,000 west of here up to Dec. 1st. It is probably a fact that some of his grading (with work) has cost \$4 1-2 per c. yd. The Directors know Reed's capacity and have had an opportunity of investigating his management. They seem determined to keep him and are paying a very large price for the luxury if it can be called one. The only thing a man needs to obtain a position under Reed is to show a discharge from the operating department."

On January 5th, ¹⁸⁶⁹ I received from Mr. Webster, my engineer in charge of repairs on the Union Pacific, the following letter:

"Enclosed I hand you estimate for bridging, buildings and snow fencing required on U.P.R.R. from Omaha west 1056 miles. The bridges from Omaha to North Platte are in good condition having nearly all been rebuilt in the last two years. They now have good pile foundations and pine timber superstructure. The bridges will last about eight years with only two ordinary repairs required by wooden bridges. These bridges should all be rebuilt at the end of eight years. Bridge across North Platte should be rebuilt in 1869. *Omaha, Neb.*

I have estimated for eating house at Shell Creek and ten-stall engineer house at Valley Station 35 miles from Omaha where engines should be changed; at present engines are changed at Grand Island, 154 miles from Omaha. The bridges on the 3rd and 4th hundred should be rebuilt this year. The contractors are at work quarrying and distributing the stone to complete the masonry this year. From the 4th hundred the bridging should be rebuilt as soon as the work can be done, excepting the Howe-Truss bridge. The contractors are building Howe-Truss bridges from Laramie west as fast as the work can be done. Bridger over the Big Laramie is completed. All of the bridges over Bitter Creek will be finished this month. Dale Creek Bridge would be safe six or eight years, but I would recommend its being filled up immediately. It would require about 18 months to build the culvert and fill up the bridge.

The contractors are building all of the necessary station buildings as fast as the work progresses. Material for fencing the line as far as Loup Fork has been purchased and part of the fence built; it will not be necessary to fence any further. The greater part of the material for completing the buildings at Omaha and Cheyenne has been bought and parties at work on them. I have estimated for shops and other buildings required at Bryan or at some point near there.

Enclosed I send you list of tools and machinery required for the same but cannot make an estimate of the cost. All of the machinery has been purchased by parties in New York and no bill sent out here; there is no one here that knows what the value is. I have not estimated for snow fences east of the 4th hundred miles; do not think they will be required. McMamin's prices for masonry are as follows: For open culverts \$6.50 per C. Yd., arch \$7.75 bridge abutment and piers \$16. buildings \$10 measured in the walls. Abutments and piers on Bitter Creek I have told he gets \$20. Other parties are getting \$27.50 for masonry of North Platte Bridge.

I have not followed these prices in making this estimate, but have made the prices at what I think the work can be done."

On Jan. 5th, ¹⁸⁶⁹ I received the following letter from Mr. Thos.

B. Morris:

Salt Lake City

"That I wrote you on the 2nd inst. giving account of my visit to Dr. Durant. I stated he would forward to me the written directions. These directions I received yesterday afternoon. I copy them: Jan. 2, '69.
Union Pacific Railroad, Ogden, "

T. B. Morris, Esq.,
Acting Division Engineer.

Sir: The former Division Engineer having left his work to accept an

appointment under the Government, you are hereby appointed Acting Division Engineer with head quarters at Ogden or Brigham City. You will at once take charge of the office at Salt Lake City together with all instruments, maps, profiles, field notes and other property which Mr. Blickensderfer has been ordered to turn over to you, and remove the same or so much of it as you may deem advisable to your headquarters. During the absence of the Chief Engineer from the line of the road you will be governed by the following instructions:

(1) Complete the survey and location you are now making of the branch to Salt Lake City and keep possession of the maps, profiles and notes pertaining to the same until further orders from me.

(2) After completing the above you will take your party to Promontory Point and make such further surveys upon the eastern slope as will enable me to decide upon the expediency of making some changes in the line in that vicinity.

(3) I desire to know at the earliest practical day the difference in length and cost between the lines already run and the best line you can get crossing the summit, with such grades and curves as in your judgment are best adapted to the country. You will report the results of these surveys to me by telegraph and await further instructions.

(4) You will draw upon Gen. G. M. Dodge, Chief Engineer, through Mr. J. E. House, Division Engineer at Omaha, for such funds as may be necessary to enable you to carry out these instructions.

I enclose for your information a copy of the resolutions passed by the Executive Committee on the 3d of July, 1868.

Yours Respectfully,

Thos. C. Durant, V. P. "

The resolution is one offered by Mr. Duff, giving Dr. Durant very large powers, saying, "And all officers and employees are subject to his instructions." It does not say he can create or promote officers. I have shown the instructions to Mr. Blickensderfer and have telegraphed you. Have bought supplies and refitted my stores and some other few things necessary and started wagons and party for Promontory Point tonight. I have not demanded from Mr. B. the papers, profiles, instruments, &c. I have in my possession the notes of the Salt Lake City Branch. I have not had any topographer for the past month and hence have not kept up with my office work and have some work on profile and map.

I would like to know what you wish me to do in regard to reporting progress and results of any surveys I may make from now on; also what to do with maps and profiles, &c. of branch line. Mr. Blickensderfer also tells me he expects to move his office to Omaha under any circumstances. Am I to do anything towards looking after the interests of this company by directing or supervising the motions of my party except the one I am and have been directly in charge of? I will go to Promontory probably in a day or two. Will wait for answer to telegram to you.

S. Seymour telegraphs me tonight that he will meet me at Ogden and go out with me, bringing probably much more specific directions about curves, grades, &c. Until I hear something from you I shall report directly to you in Washington."

I was too busy in Washington to pay any attention to this letter, so sent it to the Company and let them deal with it themselves.

I knew it would be but a short time before Mr. Durant would be put out of the Company entirely and as I had finished all my surveys and had made up my mind that it would be impossible for us to reach beyond Promontory Point, I did not think it worth while to quarrel with him over any change he might make; however, the company immediately wired Mr. Morris that he was to make no changes of line except on

approval and report to me, which Mr. Morris, to avoid trouble with Mr. Durant, did, at the same time making reports to Mr. Durant.

At a meeting of the Board on the 6th, they passed a resolution to grant lots for churches and parsonages in all towns to all Christian bodies who applied for them to use for all church purposes; also for school houses.

On Jan. 6th, ¹⁸⁶⁹ I received the following letter from Mr. Blickensderfer. I had also instructed M. Morris to discharge all his parties on our surveys whom Mr. Reed did not require on construction, so as to stop expenses:

Salt Lake City

"Your telegrams of today to Morris and myself, of course, determined our actions. Morris will take what notes &c. he wants at the west, will leave in my care all I need, to be by me taken to Omaha and will ship all others to Omaha office at once.

I ought to have stated that Hodges was paid off by House in Omaha sometime ago. McCabe was paid off by myself here immediately on my arrival, and the only parties in field are Morris' and that part of McCabe's under Moberly tracing section lines. O'Neil's party has within a day or two, I understand, arrived to take Moberly's place and the latter will be paid off at once. I should have done it, but now Morris will; at all events he so informs me. This should be done and thus reduce the forces here to Morris' and O'Neil's parties.

I never learned how far you desired to have the section lines traced. If your only object was to get far enough to locate the town near Ogden, that work should be stopped, for the lines are now traced to Brigham City; but if you desire the thing carried on as far as U.S. surveys have been made it will take all winter. I enclose you a map of the work as far as we have it in the office.

I shall, of course, await your instructions from New York as indicated in your telegram of today. I have already written what I had desired to do in the way of passing over line and collecting information. Of course, all is subject to your pleasure. My accounts will be closed tomorrow so far that I can finish them at any time in an hour or two and after tomorrow I can leave here at any time on 24 hours notice.

I find many things wanting to a full discussion of location at head of Echo; profiles, maps, &c. having been boggled up by Reed, Seymour and Co. and not returned, and it will take me some little time to get up what I want or think it all out again. But this work can be as well done at Omaha, or perhaps even at my home, as anywhere else now that I cannot have Morris or Ricksecker to help me and I shall be compelled to think it all up alone.

Durant wants Morris to make additional surveys on Promontory to try to get a cheaper line. I think he will be ordered to use 100 ft. grades and run over the higher summit into Hudnutt's ravine, down the south side of that ravine, and at its mouth turn south and follow down to flats. This makes a cheap line but a higher summit and about 3 miles longer and more curvature. Commercially the line is so inferior to the revised 80 ft. grade that when he first wrote me about it, I told him it would not answer.

Whatever you desire me to do telegraph or write and I will move at once. My desire is to get away from here soon as possible, and finish what may be left at Omaha or at home."

1869
On January 7th, Mr. Morris wrote me as follows:

"In accordance with your telegram and the orders of Dr. Durant, a copy of which I forwarded, I have taken charge of such profiles, maps, notes and other property of the Company as was under the control of the office at Salt Lake City. I divided a them into two parts-such as might be needed in any alteration or re-running of the location west of Brigham City, and all the preliminary or other notes which had found their way into the office. The first I take with me to Brigham City; the others I packed and have made arrangements to ship to Omaha together with such notes as were packed up by Mr. Hodges.

Mr. Moberly, now in charge of Mc.Cabe's party, has been ordered to report to Salt Lake City where Mr. Blickensderfer will pay them off and return the vouchers in his account. Mr. Blickensderfer has not turned over the profiles, field books or maps of the located line east of Weber Canon but takes them with him to Omaha. I understand Mr. O'Neil has received special instructions from Dr. Durant, and I suppose I will have no charge over any work he may do.

I have a map and profile of the Salt Lake Branch to make and a copy for you which as soon as I can I will have Mr. Ricksecker do and forward.

There is now a telegraph office of the Western Union Company in Brigham City and any telegrams or letters for me had better be addressed there. I leave here tomorrow; stay one day in Brigham City and go to Promontory. Col. Seymour has telegraphed me that he will go with me. I shall ask for more definite instructions as to grades, curves, &c. as I am instructed to run the line best adapted to the ground and I think the present located 80 ft. grade line is the best line for the company to build and operate. A much cheaper line will be found to build but it will be longer, a higher summit and probably a steeper grade. It will not compare commercially but will probably be some \$200,000 less first cost.

As I go West, I will carefully examine the work on both the U.P. and C.P. lines and write you the very latest. I will go as far west as Monument Point for that purpose."

1869
On January 11th in answer to Mr. Browning's letter to Jesse L. Williams, I wrote him as follows:

Washington
"In compliance with the order of the President of the U.P.R.R. I herewith furnish you a profile of our line located over the head of Echo, extending from Yellow Creek 10 miles east of that point to Weber Valley. I accompany it with a sketch to enable you to see the extent of country it covers. I am unable to say whether it is over the identical ground covered by the map of the C.P.R.R. as they have never made a final location over that country, but practically it is over the same country, it follows down the ravine and valley that their preliminary line of 1867 does and that is the only line they ever run in that country."

1869
On January 12th, I wired Mr. Morris as follows:

"Make map and profile of located line from Head of Echo to Humboldt Wells immediately for commissioners who are to examine the line. Answer."